The RUBBER AGE

Table of Contents

Vol. 22 OCTOBER 25, 1927 No. 2

FEATURES and DEPARTMENTS

Rubber Erasers as Advertising Novelties 69
Health Hazards of Compounding Ingredients 71
A New Internal Rubber Mixer 75
Production of Automobile Rims 76
Rubber Exports from the Amazon 76
Making and Testing Rubberized Fabrics 77
Schaphorst's Chats with the Engineer 70
Editorial Comment 83
London Letter 95

NEWS OF THE INDUSTRY

Ford Acquires Rubber Lands in Brazil 65
Rubber Exchange Begins Its Third Year 67
Financial News and Exchanges 81
Goodyear's Australian Plant Opened 85
Harrisons & Crosfield Increase Earnings 85
Dunlop Companies in Closer Relationship 86
New Rubber Merger in Sweden 86
August Tire and Tube Production Advances 88
September Rubber Consumption Below Estimate 89
Predicts Increased Yield on U. S. Estates 90

MARKETS and STATISTICS

Cotton and Fabrics 97
Crude, Scrap and Reclaimed Rubber 97
Chemicals and Compounding Materials 98
Statistical Department 101

MARKET PLACE LISTINGS 105

ADVERTISING INDEX 110

Published Twice-a-Month by

The PALMERTON PUBLISHING CO., Inc.

(Publication Office—1-3 Peace Street, New Brunswick, N. J.)

Editorial Office: 250 West 57th Street, New York City

Entered as Second Class Matter, August 24, 1927, at the Post Office at New Brunswick, N. J., under Act of March 3, 1879.

Contents Copyrighted 1927 by The Palmerton Publishing Co., Inc.

Concise News Reporting

IN the realm of news stories and the interpretation of trade news, a trade paper is called upon to play a difficult but important function. Its news items must be concise because its readers are busy men, and because the paper is read mostly during working hours in the executive offices or the shops. News must be reported impartially, recording all the pertinent facts in a digested manner, clearly, succinctly and accurately. News items in the daily press are often padded with embellishments, sometimes colored with prejudices, at times full of extravagances, and in the rush of preparation, frequently replete with errors.

In the pages of this publication, the current news of the rubber industry is prepared with a view to giving its readers a clear and accurate digest of all the pertinent facts, in as few words as possible, and correlated from all the authoritative sources available.

The RUBBER AGE

Table of Contents

Vol. 22 OCTOBER 25, 1927 No. 2

FEATURES and DEPARTMENTS

Rubber Erasers as Advertising Novelties 69
Health Hazards of Compounding Ingredients 71
A New Internal Rubber Mixer 75
Production of Automobile Rims 76
Rubber Exports from the Amazon 76
Making and Testing Rubberized Fabrics 77
Schaphorst's Chats with the Engineer 70
Editorial Comment 83
London Letter 95

NEWS OF THE INDUSTRY

Ford Acquires Rubber Lands in Brazil 65
Rubber Exchange Begins Its Third Year 67
Financial News and Exchanges 81
Goodyear's Australian Plant Opened 85
Harrisons & Crosfield Increase Earnings 85
Dunlop Companies in Closer Relationship 86
New Rubber Merger in Sweden 86
August Tire and Tube Production Advances 88
September Rubber Consumption Below Estimate 89
Predicts Increased Yield on U. S. Estates 90

MARKETS and STATISTICS

Cotton and Fabrics 97
Crude, Scrap and Reclaimed Rubber 97
Chemicals and Compounding Materials 98
Statistical Department 101

MARKET PLACE LISTINGS 105

ADVERTISING INDEX 110

Published Twice-a-Month by

The PALMERTON PUBLISHING CO., Inc.

(Publication Office—1-3 Peace Street, New Brunswick, N. J.)

Editorial Office: 250 West 57th Street, New York City

Entered as Second Class Matter, August 24, 1927, at the Post Office at New Brunswick, N. J., under Act of March 3, 1879.

Contents Copyrighted 1927 by The Palmerton Publishing Co., Inc.

Concise News Reporting

IN the realm of news stories and the interpretation of trade news, a trade paper is called upon to play a difficult but important function. Its news items must be concise because its readers are busy men, and because the paper is read mostly during working hours in the executive offices or the shops. News must be reported impartially, recording all the pertinent facts in a digested manner, clearly, succinctly and accurately. News items in the daily press are often padded with embellishments, sometimes colored with prejudices, at times full of extravagances, and in the rush of preparation, frequently replete with errors.

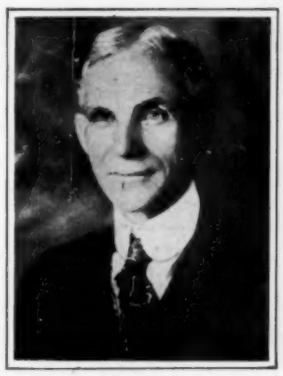
In the pages of this publication, the current news of the rubber industry is prepared with a view to giving its readers a clear and accurate digest of all the pertinent facts, in as few words as possible, and correlated from all the authoritative sources available.

The RUBBER AGE

VOL. 22, NO. 2 OCTOBER 25, 1927

Ford Acquires Concession of Rubber Lands in Brazil

Announcement by Edsel Ford that Rights to Between 3,000,000 and 4,000,000 Acres of Fertile Rubber Land in Brazil Have Been Obtained Confirms Reports—Immediate Development Planned



Henry Ford

IN complete but unexpected confirmation of rumors which have long been current to the effect that the Ford Motor Company would undertake rubber growing in tropical America, Edsel Ford, son of Henry Ford and president of the automobile company founded by his father, announced on October 11 that a concession of from 3,000,000 to 4,000,000 acres of rubber lands in the state of Para, Brazil, had been acquired by the Ford organization and that development work would start at once. The lands included in the concession are on the Tapajoz River in the region which was most highly praised by the U. S. rubber investigators who visited the Amazon in 1923.

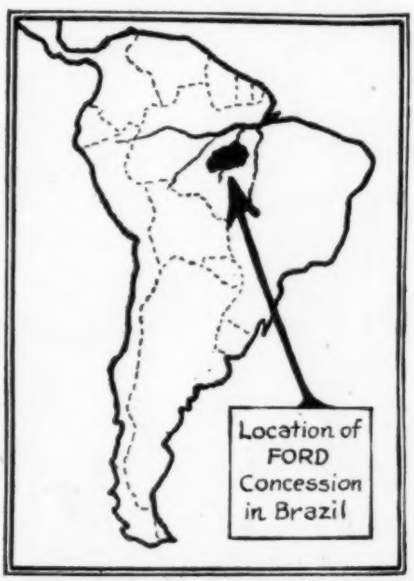
The concession provides that a certain substantial acreage of rubber must be planted each year until the whole area is developed. A new subsidiary development company has accordingly been incorporated in order that work may be started without delay. This company, which was organized in Para, is known as the Companhia Ford Expansao Industriale de Brasil, or, in English, the Ford Industrial Expansion Company. It will be conducted by Henry Ford, Edsel Ford and other men prominent in the Ford organization in Detroit.

Extensive Development Required

The immediate development work, according to Edsel Ford, will involve the placing of settlements and a widespread campaign of sanitation against jungles diseases. Boats of the Ford fleet will be in communication with the property. These vessels are used at the present time for conveying raw materials to the Ford factories and ultimately it is expected that they will be leaving the Amazon with cargoes of rubber grown on the Ford properties. The Ford companies are now active in the development of airplanes and it was announced that such craft would probably be used in keeping in touch with the Amazon estates.

The announcement of Edsel Ford was made on the day after the development company had been incorporated at Para. The Ford company was represented by O. Z. Ide, a Detroit attorney, and W. L. Reeves Blakeley, of Highland Park, Mich. These signed in company with statutory Brazilian stockholders. Mr. Blakeley and Mr. Ide were due to start for the United States as soon as the deal was consummated but it is contemplated that the former will return to Brazil actively to direct the pioneer work in converting the thousands of square miles of jungle into rubber estates.

Part of the concession which the Fords now hold was purchased from Jorge Dumont Villares of Sao Paulo. Mr. Villares was associated for two years with Mr. Blakeley in inspecting a number of possible rubber-growing regions of Brazil. Another of Mr. Ford's investigators was Dr. Carl LaRue, a botanist of the University of Michigan. Dr. LaRue has specialized on rubber plants. He was formerly attached to the Department of Agriculture and was assigned by that department to accompany the investigators of the Department of Commerce when, under Congressional direction, they visited the Amazon in 1923. Following his return Dr. LaRue prepared an independent report which was published by the Department of Agriculture. His Brazilian work for Ford was done in 1926.



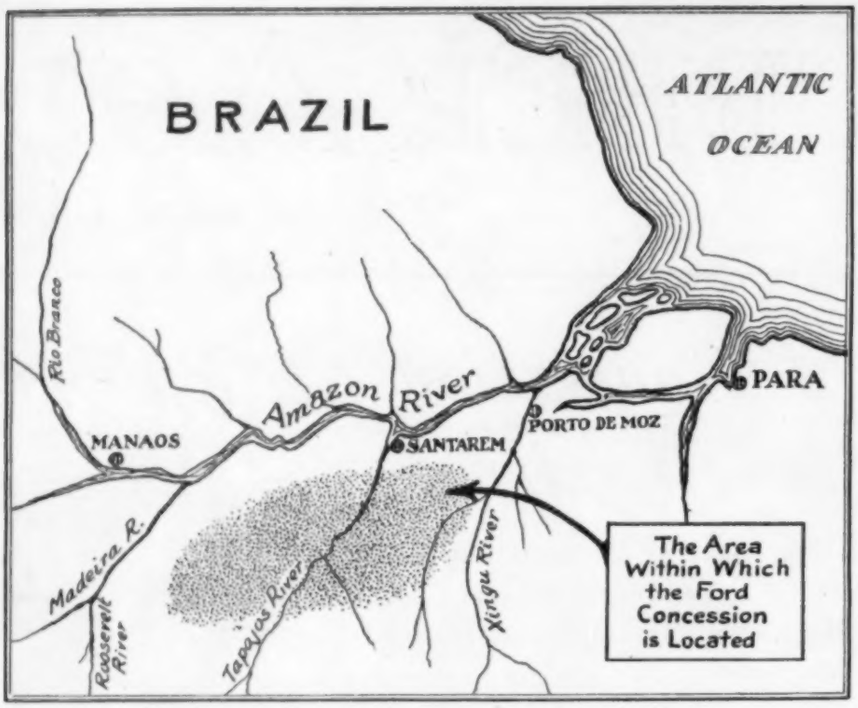
Map of South America

Showing the General Location of the Ford Concession in the State of Para, Brazil, in the Region of the Tapajos River

Follows Firestone's Project

The announcement that the Ford interests were to take up rubber planting on a large scale recalled at once the friendship between H. S. Firestone and Henry Ford. Mr. Firestone is known to have tried to interest his friend in rubber culture and his efforts in that direction have apparently ended successfully although Firestone passed over the region to which Ford is now committed. Firestone secured a concession for a million acres of land suitable for rubber in Liberia, West Afria, and development work is now well under way in that country.

The Ford concession in the state of Para covers about the most accessible good rubber land in the Amazon valley. It is understood to be bisected by the Tapajoz River with the Xingu River on the east and the Roosevelt



Map Showing Location of Ford Concession in Brazil

The Lands Selected by the Ford Organization for Growing Rubber Are on the Tapajos River—a Section of Brazil Which Is Said To Be Readily Accessible While Soil and Climatic Conditions Are Favorable

River, named after the American president and explorer, on the west. The greatest part of the acreage is understood to lie between the Tapajoz and Xingu Rivers. This region comprises a well drained plateau with excellent soil conditions. The land is now covered with jungle, including thousands of wild Hevea rubber trees. No part of the Ford announcement refers to any plan for tapping the wild rubber.

Conditions Are Reported Favorable

The Tapajoz and Xingu River regions were more favorably commented on by the U. S. rubber investigators than was any other district in the Amazon. Not only is the region easily accessible, but soil and climatic conditions are as favorable and labor conditions are more favorable. No better wild rubber grows in Brazil than along the Tapajoz, according to the investigators. It was from this region that Sir Henry Wickham obtained the rubber seeds which formed the basis of the present mammoth rubber plantation industry of the Middle East today. The region is of historial interest to Americans as being the site of the settlement of a band of Confederate soldiers who left the United States following the Civil War.

Santarem, the city which marks the junction of the Tapajoz River with the Amazon, is approximately 516 miles from the city of Para. On the Xingu near its junction with the Amazon there is the city of Porto de Moz, which is 318 miles from Para. These cities, together with Para, will probably form the main centers for the Ford development. Both the Tapajoz and Xingu Rivers attain a width of several miles as they approach the Amazon. The parent river is itself navigable several hundred miles from its mouth, ocean steamers regularly calling at Manaos, which is 925 miles from Para. The distance from New York to Para is 3,038 miles.

The report of the U. S. rubber investigators on the Tapajoz region speaks of the river being fronted for many miles by a low sandy plain back of which is a stretch of rolling hills. These two belts are reported to be about seven miles in width. "The main point of interest, however," the report continues, "is a distinct plateau back of the plain and rolling hills. The plateau averages about 300 feet above the water level of the rivers. It is covered with a fairly heavy jungle. The exact area covered by this plateau is not known. It would appear that there is a large area, amounting to possibly a million or more acres, suitable for rubber plantation purposes. On account of its excellent location with respect to transportation and proximity to Para, it occupies a very advantageous position."

With respect to lands along the Xingu River, which will form the eastern boundary of the Ford properties, the report of the American rubber experts is scarcely less favorable. The distance between the Xingu and Tapajoz as they approach the Amazon, of which both are tributaries, would average around 200 miles. This intervening land is dealt with in the experts' report as follows:

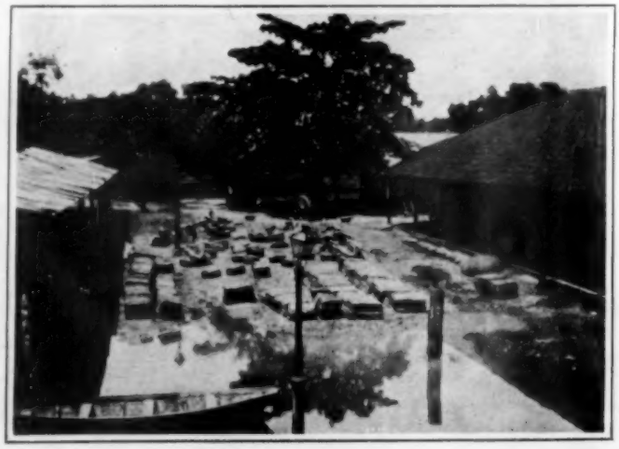
Territory Is Well Drained

"There are but two or three rivers of any size between the Tapajoz and the Xingu and flowing parallel with them. There must exist, therefore, between these two rivers and below the cachoeiras belt a very large area of high well-drained land, level to undulating, that would be excellent for rubber plantations. The land above the cachoeiras is rougher than below, and undoubtedly large areas of excellent land of a hilly character could be found there. The difficulties of transportation, however, make them less favorable for plantation purposes."

In taking so positive a step toward securing a large and independent rubber supply, the Ford Motor Company is only following out a policy adopted many years ago. The company now produces a dozen kinds of raw materials which it needs, and controls and operates other basic industries as well. Ford has taken over the fabrication of practically all parts used in his automobiles with the prominent exception of tires. Tires have been built at Detroit on an experimental scale and it has been reported that production would be expanded to a commercial basis but any evidence of an intention to produce tires in a big way has been lacking. Original equipment tires for Ford automobiles have been purchased from prominent tire companies, notably Firestone and Goodyear. If Mr. Ford intends to become a large producer of tires after he begins to draw a large supply of rubber from his Brazilian rubber estates, nothing has been said or intimated concerning it.

On the Xingu River

The accompanying illustration shows rubber awaiting shipment at Victoria, on the Xingu. It is in this region, as shown by the map above, that Ford has obtained his concession to rubber lands



Rubber Exchange of New York Begins Its Third Year

Second Annual Report of Exchange Shows a Year of Notable Performance —Transactions on Floor Involved 180,000 Tons Valued at $150,000,000

THE Second Annual Report of the Rubber Exchange of New York, which was made public on October 11, reveals that the year ended August 31 was one of notable performance and accomplishment. Approximately 72,000 contracts to the value of more than $150,000,000 were traded in on the Exchange during the year. These contracts called for about 180,000 tons of rubber, or almost half as much as was used in the United States during the period.

Insofar as the volume of trading is concerned, this year's report compares favorably with that of last year. There was, however, a marked decline in the total value of the transactions handled, which was due to the sharp fall in the market price of rubber and not to any drop in the tonnage or number of contracts sold on the floor of the Exchange. The previous report covered only 6½ months of trading, from February 15, 1926, when the Exchange was opened, to August 31 of the same year. During that period 37,401 contracts were handled, valued at about $200,000,000.

Although such a great tonnage of rubber was traded in the last year, the number of disputes regarding quality totalled only 53, involving 520 tons of rubber. Quality appeal cases totalled eight, involving 72½ tons.

The membership of the Rubber Exchange at the end of the fiscal year was at its limit of 255 members, distributed as follows: U. S. A. residents, 205; England, 29; France, 14; Holland, 4; Belgium, 1; Germany, 1; and Ceylon, 1. During the year, 27 memberships changed hands at an average price of $4,617. The highest price paid was $5,500 and the lowest was $4,000. When the Exchange was organized memberships bore a price of $1,000.

The election of the Rubber Exchange was held on October 18 and resulted in F. R. Henderson being returned for his third term as president. Charles T. Wilson and J. Chester Cuppia were re-elected vice-president and treasurer, respectively. These officers have all been prominent in the organization and work of the Exchange and their re-election may be taken as a sign of the satisfaction which the membership feels in their devotion to the interests of the organization.

Francis R. Henderson, who was re-elected President of the Exchange.

The Floor of the Rubber Exchange of New York, Where $150,000,000 Worth of Rubber Changed Hands During the Last Year

Members of the Board of Governors were also elected at the meeting on October 18, the following members being re-elected:

Robert L. Baird, William E. Bruyn, James T. Bryan, W. Leslie Harriss, David S. Kubie, Jerome Levine, Fred Pusinelli and Lucius D. Tompkins. Others elected to the Board were: D. D. Haldane, of Haldane, Bierrie & Co., Inc.; Otto Meyer, of Meyer & Brown Corp.; John H. McFadden, of George McFadden & Bro., and Walter W. Price, of Livingston & Co.

The operating expenses of the Rubber Exchange during the year amounted to $75,424.40, while the total income was $75,858.86. There was accordingly a balance of $434.46 remaining, whereas it had been estimated at the beginning of the year that there would be a deficit of over $5,000. During the year the loan of $10,000 made to the Rubber Exchange Clearing House, Inc., was

liquidated. The income of the Exchange is drawn principally from the annual dues of the members. The Board of Governors has recommended that the dues be set at $275 for the ensuing year. The principal expenses are for salaries and wages, and rent of the Exchange quarters in South William Street.

In his address at the annual meeting of the Exchange, F. R. Henderson, president, reviewed the beneficial effect exercised by the Exchange during the past year on the rubber industry in general, in helping to stabilize prices and facilitating the trading in crude rubber and rubber futures.

"The narrowness of market fluctuations in the last year," Mr. Henderson said, "will undoubtedly influence financial institutions to look with more favor on the commodity from the standpoint of collateral, and we must hope that this will be conducive to the maintenance of substantial stocks in this country as well as London, thus making for more healthful trading. I can see nothing on the general business horizon to make me hesitate to predict the continued healthy development of the rubber business, and a consequent broadening of the Rubber Exchange operations.

"I am confident, and thoroughly believe, that the advantage of price insurance in Exchange operations will become more and more understood by producers in the Far East, as well as manufacturers here, and it is gratifying that this phase of the Exchange business has become so important.

Hand-to-Mouth Buying

"Another feature has been the adoption by rubber manufacturers of a 'hand-to-mouth' policy of buying. Of course, this very policy has been developed more in this country in the past few years than ever before, and has been encouraged by conditions.

"Business in the world today has reached such large proportions that all nations have to give consideration to the economical aspect of international relations. This means, at times, governmental regulations to meet certain exigencies, but the danger is that the regulations may be continued after the necessity has ceased to exist.

"During the year prices on the Exchange had an extreme fluctuation of 11.9 cents per pound, the highest price, 45.50 cents, being reached September 26, 1926, and the lowest, 33.60 cents, on August 30, last. June 9, 1926, established a new record in volume, when 1,667 contracts changed hands. Despite the heavy trading that day, the maximum fluctuation was only 70 points, or less than one cent a pound. This is noteworthy in rubber history."

The treasurer of the Exchange reported that the building fund now amounts to $16,478. Total assets are $235,827.

Dealers Have Six Tires More Than Year Ago, Survey Shows

Semi-Annual Compilation of the Commerce Department Reveals That Average Dealer's Stocks on October 1 Was Higher Than Last Year—Many Had Thought Stocks Were Low.

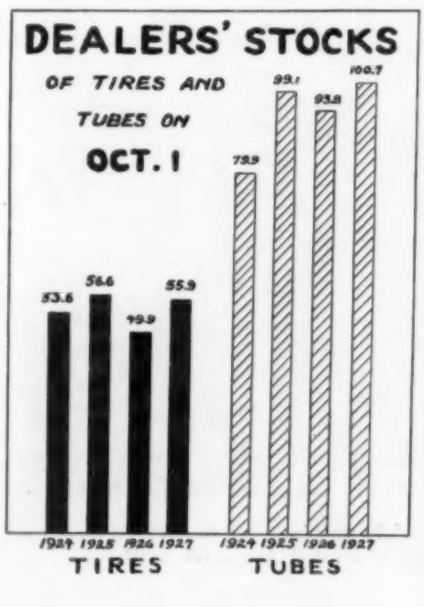
The preliminary figures of the semi-annual survey of tire dealers' stocks, taken on the first of April and October of each year by the Rubber Division of the Department of Commerce, show the average tire dealer to have had approximately six more tires on hand October 1, 1927, than were in his shop on October 1, 1926. The average number of casings per dealer this year totaled 55.9 as against 49.9 on October 1, 1926, and 56.6 on the same date, 1925. In 1924, the same average stood at 53.6 casings.

Stocks of balloon casings are included in the above figures but when taken separately average 29.8 per dealer, or an increase of 10 tires, or 50 per cent over last year's figure of 19.8, which demonstrates the growth in popularity in this type of tire.

Tube Stocks Also High

An increase was also registered in the stocks of automobile inner tubes. The average number in dealers' hands was 100.7 this October, as against 93.8 on October 1, 1926, and 99.1 on the same date of 1925.

The survey conducted by the Department of Commerce is not completed, and a final and detailed summary will be issued by the Department late this month. The present figures embrace returns from 26,865 dealers. Questionnaires were sent to over 100,000 tire dealers. Last year 38,768 dealers furnished the desired information to the Department and it is hoped that the number will be greatly increased this year. Previous experience in the compilation of this survey has shown, however, that the complete returns slightly increase the year's final averages.



The gain noted this year is significant in view of the recent decrease in tire production, but it is in keeping with the increased use of motor vehicles and probably would have run higher if the automobile industry, and particularly the Ford Motor Company, had met its high production record of last year.

Accepting the figure of 100,000 as the probable number of tire dealers throughout the United States, it can be deduced from the above averages that there were 600,000 more tire cases of all kinds in the hands of dealers on October 1, 1927, than there were on October 1, 1926; that included in their total stocks, dealers held 1,000,000 more balloon casings than were on the market in dealers' hands on the same date last year; and that there were approximately 700,000 more inner tubes on the dealers' shelves.

Low Stocks Were Rumored

These increases in stocks are all the more significant in view of the persistent reports that tire stocks had been depleted. Even the larger tire manufacturers had not been able to secure, either through their branch offices or salesmen, any accurate figures on the situation. The cry that stocks were depleted has been particularly prevalent amongst the British rubber growers and traders in their futile effort to improve the falling price of crude rubber. The survey of the Department of Commerce, therefore, provides a fairly accurate guide to the rubber manufacturing trade, for the laying out of production schedules and tire distribution for the immediate future and at the same time gives a periodical index to the trend in tire movements from the dealers' hands to the consumers.

The table showing the preliminary averages of stocks per dealer on October 1, in 1927, 1926 and 1925 is given below.

AVERAGE STOCKS PER DEALER ON OCTOBER 1ST

	1927	1926	1925
Total casings (including balloons)	55.9	49.9	56.6
Balloon casings (alone)	29.8	19.8	17.5
Inner tubes	100.7	93.8	99.1
Solid and cashion tires	26.5	23.9	25.0

Rubber Erasers Find Wide Use As Advertising Novelties

New Field of Advertising Possibilities Opened Up In Manufacture of Erasers Stamped With Firm Name or Trade Mark—Number of Possible Designs is Unlimited

THE idea of stamping rubber erasers with some name or slogan as an advertisement is not new, but the business has never been so widely developed as it is today. An entirely new field in advertising possibilities has been built up and the scope of such advertising appeal is almost unlimited.

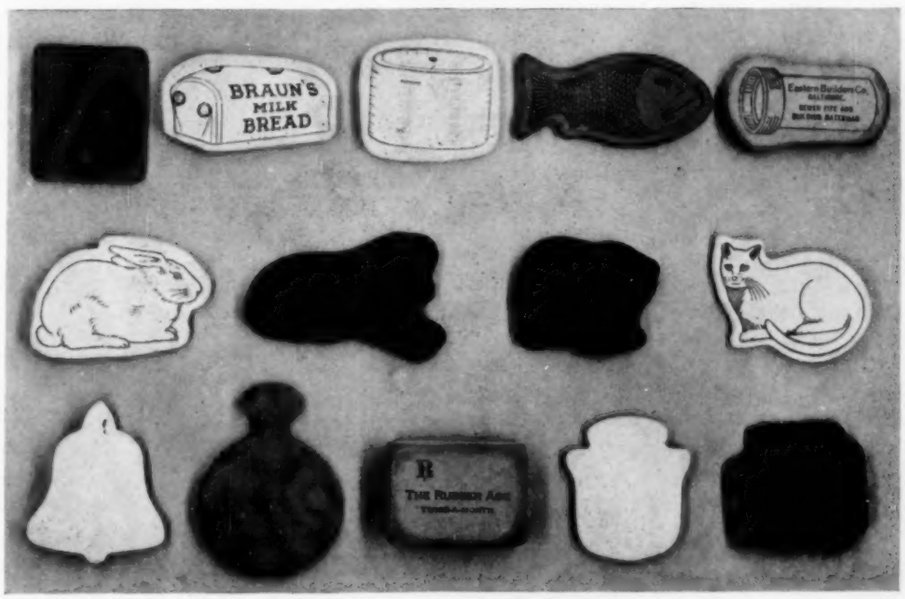
One of the best known rubber eraser manufacturing companies in the United States, located at Newark, N. J., is particularly specializing in these eraser novelties and the wide range of designs which has been developed is indicated in one of the accompanying photographs. Newark, N. J., has long been the center of the eraser manufacturing industry, since the time when Christopher Roberts first started his plant in the early fifties of the last century. Today, American erasers dominate the market and excel in quality the once famous German and French products.

Several years ago the ordinary lead pencil was exploited extensively as an advertising medium and it was not long afterwards that the idea was conceived that rubber erasers could also serve a similar duty, and be a constant reminder of the advertiser to the business executive at his desk, to the store-keeper at his books, to the purchasing agent, to the children in the school room and to all classes of people who in their weakness as human beings cannot fail to make errors. As an eraser salesman remarked, "It's where the 'rub' comes" that gives the advertising appeal to rubber erasers.

A great many of the smaller, standard types of commercial erasers besides carrying a trade name and advertising message are also stamped on the reverse side with pictures of animals, nursery rhyme characters, etc., and are used in the school kits of small children. There is also the ordinary commercial type of oblong or disc eraser, either stamped with the name or trade mark of the advertiser, or in the case of the disc type, a celluloid button is inserted in the center with the trade mark or slogan. The business in these latter varieties is huge and single orders run as high as 100,000 erasers at a time.

But it is in the novelty shapes of erasers that the manufacturers are now specializing as an advertising medium. A well-known insurance company uses a heart-shaped eraser, urging insurance protection through a group of different inscriptions stamped on the face of the eraser such as "When the heart beats stop, then comes the rub." A sewer pipe manufacturer distributes annually to all contractors on his list, a simple reminder in the shape of an eraser cut to resemble a length of pipe and printed with the imprint of his firm. A picture of the latter is shown in the accompanying illustration.

The number of designs possible, of course, is unlimited. The Sesqui-Centennial souvenir eraser was a replica of the Liberty Bell. In this connection an interesting problem was presented in endeavoring to put the crack in the bell and it was finally decided that it could only be indicated by a design on the face rather than by an actual indentation in the rubber surface.



An Assortment of Advertising Erasers

The fish is used to advertise a cod liver oil; the bell was for a Sesqui-Centennial souvenir; the watch-shaped design was used by a watch manufacturer; the shield by an automobile distributor; the length of pipe was the advertisement of a sewer pipe manufacturer

A large dairy products company is negotiating for the reproduction of a milk bottle shaped eraser, the initial order for which will go into many thousands. A cod liver oil dispenser placed a huge order for erasers in the shape of a fish in imitation of the type of bottle which he uses and which at the same time, is characteristic of his product.

The heart shaped eraser has proved very popular and

Inspecting and Stamping Erasers in the Factory of the Weldon Roberts Rubber Co., Newark, N. J.

has been used by a large number of advertisers of widely different businesses. A bank uses this design effectively in advertising itself as being located "in the heart of the city."

In the illustration on the preceding page there are several blank designs shown. The one on the lower right-hand corner was designed by a banking institution as a replica of a small metal savings bank which they distribute to children and housewives to encourage small savings deposits. The shield was originated by a distributor of the Cadillac automobile, while the watch-shaped eraser advertised one of the cheaper watch manufacturers. An illustration is also shown of the eraser which was distributed by THE RUBBER AGE at a meeting of rubber chemists.

Can Be Made in Many Designs

The process of manufacture of erasers was recently described in THE RUBBER AGE. There is no deviation in the methods of manufacture of these advertising novelties from the ordinary erasers, other than the step of stamping them out in the special shapes. This stamping out is done with dies such as are used in rubber heel manufacture and in many other departments of the rubber industry. The manufacturer of advertising erasers has on hand the dies suitable for the most commonly preferred shapes and has other dies made when a customer wants a special design to fit his product or his own advertising ideas.

The name of the eraser manufacturer is usually left off the advertising erasers. The printing may include a name or slogan, a trade mark or some other design. This printing is done from electrotypes like bookbinders' stamps. The eraser manufacturer has these electrotypes made up after the customer has indicated exactly what he wants on the eraser. The printing is done by hand with a special ink which does not easily wear away when the eraser is used.

Advertising erasers come in so many sizes, shapes, qualities and stampings that it is almost impossible to say anything specific concerning their cost. The more unusual the job, of course, the more expensive it will be, particularly when only a small quantity is ordered. But most advertising erasers are made in large quantities and the price per piece is quite low. Even in small quantities a good advertising eraser can be had for three to five cents.

The advertising value of the eraser lies largely in the fact that it is never thrown away, as blotters frequently are, or not soon destroyed and forgotten, as usually happens to advertising balloons. Instead the eraser finds a permanent place in the home, school or office and repeats the advertiser's message day after day.

Schaphorst's CHATS *with the* ENGINEER

By W. F. SCHAPHORST, M.E.

IT has often been written that little is known about the amount of lubricating oil that should properly be used in a steam engine, turbine, electric motor, or anything else. How many drops per minute is the correct number? One or ten? How can anybody be sure? One drop per minute may not be enough in your engine. Ten may be too many. It is impossible to look inside an engine and actually see what the lubricant is doing, and even then we could not be sure without a test of some kind.

A good test for determination of the correct amount of lubricant is the "flywheel test," which is applicable also to turbines and motors. While feeding, say, 10 drops of oil per minute to the cylinders, just after a long run, and while running at normal speed, throw off all load from the engine. Then suddenly close the steam valve. The flywheels will cause the engine to continue to run for some time, and that is an important factor. How long does it take the flywheel to stop? By use of your watch you can find the time to the second. Make a note of the time required to stop from the instant the steam valve is closed until the engine stops "dead." Do it carefully.

Next time try 9 drops of oil per minute, but do not allow any other condition to be changed. If the stopping time is the same, you may as well save 60 drops an hour, 600 drops a day, or 18,000 drops a year. Then try 8 drops, 7 drops, 6 drops, etc. Finally, use the least number which permits maximum stopping time.

Judgment must be used with this test, of course. Do not choke down the lubricant until the cylinder is liable to be ruined. But as long as the stopping time is at its highest you can feel certain that the cylinder is well lubricated.

To be sure this test is not applicable or practical in every plant, but I hope it may serve as a good suggestion so that many drops and much money will be saved.

Does Clear Water Scale?

THERE are thousands of engineers of plants throughout the country today who are still ignorant of the scale problem and don't even know that their boiler tubes are coated with scale. For instance, a manufacturer wrote in recently stating that in 75% of the reports he receives from officials and engineers they claim they have no scale or are using "good" well water which does not produce scale. Yet is is a well known fact that well water is often highly impregnated with scale-making properties. In other words because the water is clear and safe for drinking purposes and shows no muddy deposit many engineers seem to think that it is free from scale properties.

There are thousands of plants where no attention whatever is paid to scale, yet every little while they find it necessary to retube their boilers and they simply put that down to wear and tear.

The Series of Articles on Purchasing, Begun in THE RUBBER AGE of September 10, Will Be Continued in Next Issue

Rubber Compounding Ingredients *and* Their Health Hazards

Not Many Materials Used in Rubber Compounding Are Capable of Jeopardizing A Worker's Life, but Others Are Mildly Harmful and Proper Precautions Should Be Taken in All Cases

By J. NEWTON SHIRLEY, M.D.,
Hood Rubber Company, Watertown, Mass.

A PREVIOUS speaker[1] has given a very complete resume of the common organic accelerators, and their common uses and dangers. Of course there are on the market many trade preparations which are merely forms of those noted and the derivatives of them. I feel that the manufacturers have endeavored to avoid known toxic substances. Some may be detected by color, but most are not distinguishable except by delicate tests. As you have noticed, most of these substances are used in relatively small amounts and the hazards are thus largely confined to the compound weigher handling them directly. I have chosen to mention the other substances used and their general hazards we meet in the compounding and mixing rooms, rather than attempt to discuss further a paper which I feel is most complete. I will attempt to be as practical as possible and present these as they may come up to the general safety man.

The first is, of course, lead—most commonly used in form of the yellow or orange oxide, litharge. We first meet this friend in the opening of the kegs, which is practically always accompanied by considerable dust. I have never seen a workman use care here. The end is smashed in with a bar and of course the blow carries wood into the powder, causing a fair amount of dust to rise. This keg may be emptied into a bin or the weighing out may be done direct from the keg, probably this is the safer way because of less dust.

Use of Masks and Exhaust Hoods

The weighing process may be well safeguarded by the proper use of respirator masks and, if possible, by an exhaust hood placed at the rear of the weighing stand or table. The compound weigher handling litharge should be particularly careful.

His respirator will protect him from the dust if he will use it and cleanliness of person before eating and after work will keep him free from any dangerous amount of lead. One company rotates the compound weigher on this work so that any one man is not on lead oftener than once a month. This weighing may be done into a batch pan or scale pan and put directly into the large batch pan, thus contaminating all the dust with lead, or into a small paper bag, keeping the batch free of lead until this substance is added directly on the mill by the mixer. Several companies are using a "master batch" for their lead compounds; this exposes only the litharge weigher and the mixer, mixing the master batch to the dust. This is quite a task in a large plant where several kegs of litharge are used in the course of a day. After the batch pan containing litharge with other substances reaches the mill practically all lead hazards disappear if the mill is properly hooded. I have heard it said that if master batches are used for lead, no exhaust hood is necessary. This is not true.

A Pigment Warehouse and Screening Room

We then immediately reach the question of other dusty compounds and fumes from such substances as may break down on the mill. Lead once added to compound and worked in becomes less hazardous, but is still capable of producing symptoms if handled carelessly. I once heard it said that the whiting used in dusting stock in bins can pick up enough lead from the stock to become quite a material hazard. Personally, I feel that some other source of lead must exist.

The general rules to observe for lead in the compound room are:

1. Handle lead with as little dust raising as possible.
2. Protect weigher with a respirator of proper type.
3. Exhaust the dust away from the weigher if reasonably possible.
4. Rotate compound weighers where possible.
5. Require strict hygiene on the part of the workers by
   - (a) Clean clothes furnished by employer daily.
   - (b) Shower bath after day's work.
   - (c) Careful cleaning of hands and face before eating.
   - (d) Lunch room should be provided.
6. Institute periodic medical examinations of these men every month. The mixers and floormen handling the batch pans on the mills should be required to take a shower after the day's work and wash carefully before eating. Medical check-up of mixers and floormen should be done occasionally, but I feel that once every two months is sufficient un-

[1]The article printed herewith reproduces a paper read by Dr. Shirley at the recent Safety Congress in Chicago. The previous speaker referred to was L. J. D. Healy of the Fisk Rubber Company; his paper will be published by the National Safety Council as a Safe Practices pamphlet.

Weighing Ingredients for Batch Boxes

less some suggestive findings are noted. It has been my experience that a group of mixers examined in the late winter, when the windows and doors have been shut and the exhaust systems on the mills are functioning properly, show a better blood picture than in the late summer when the doors and windows are open and the cross currents of air are interfering with the exhaust hoods over the mills.

The question of the type and thoroughness of the medical examination may be asked. I believe the man should be fairly carefully looked over. Leading questions attempting to bring out symptoms of absorption should be asked; such as indigestion, diarrhoea, constipation, cramps or colic, tired feeling, uneasiness, loss of weight or loss of color. We should then note the general appearance, color, condition of mouth, especially gums for lead line and tongue for coating from constipation. Then note heart and lungs. In any case where a suggestive story is obtained or suspicious signs are noted, further study to rule out lead should be done.

Hemoglobin and Stippling Tests

As for laboratory work, I believe a hemoglobin test should always be made and a smear for stippling taken in in every case where there is a suggestive symptom or the hemoglobin is low. A positive diagnosis is made on the finding of a lowered hemoglobin and stippling with suggestive symptoms and exposure. We are constantly told that stippling is found in only 65 to 70 per cent of positive cases. Therefore the absence of stippling should not cause a diagnosis of lead poisoning to be passed up. This brings up a very important question: is lead absorption a better term than lead poisoning?

The body is capable of ingesting and excreting lead up to a fairly definite amount. Anything above this is stored in the various organs of the body and will give rise to gradually increasing symptoms. This is so-called lead absorption and I believe that all cases in our industry should not get beyond this level; detection and transfer will keep these men on the job without any loss of time or pay, as a rule. At times you will see a case where a man becomes the victim of an acute infection such as "grippe," in which the increased body metabolism with elevated temperature will free a part of this stored lead in sufficient quantities to cause acute symptoms, usually noted only as a slow convalescence from illness.

We have yet to determine just how much effect this continued exposure to small amounts of lead may have on later developments in body pathology. It has been stated that in towns where work in lead is the major industry, (1) the presence of a higher percentage of hypertension, arterio-sclerosis and chronic nephritis and chronic heart conditions are noted in late middle life. But I believe that all those men were exposed to more marked doses of lead than men in the Rubber industry. It may also be true that the result of lack of precautions at earlier dates may influence the figures.

Should tobacco be chewed by workers in lead? This is a serious problem. You will find most foremen telling their workers to chew, and perhaps rightly. As the entrance of lead is largely through the digestive tract, any procedure causing the collecting of dust in saliva and expectoration may be very important in cases where proper ventilation removing the dust is not possible. But remember the plug of tobacco soon becomes covered with lead and other compounds.

Effect of Inhaling Zinc Oxide

Zinc has become a very important ingredient in connection with organic accelerators, as several will not function except in the presence of zinc. Recent investigations have shown that "metal fume fever" may also come from the inhalation of a sufficient quantity of zinc in the form of fine dust, usually zinc oxide.

Zinc oxide taken into the body in sufficient quantities (2) produces general malaise and chills accompanied by an elevation of temperature. This is followed by a leucocytosis and an apparent immunity to zinc after the first twenty-four hours. This reaction is dependent upon the inhalation of a sufficient amount of fine zinc oxide dust. It is doubtful if the worker in the ordinary compound room would have a sufficient amount to produce symptoms, but this may be covered up by the fact that a new man on the job develops his immunity unnoticed and the older worker has no symptoms, and shows no signs. We have no information which shows any physical evidence of permanent changes in the body. Adequate ventilation on mills should remove the hazard here and care in handling zinc in compound room should remove all hazard there.

Lime—Hydrated lime is used to a limited extent in compounding. This is essentially harmless as it rarely contains any lime other than the hydrate or carbonate. The dust does produce a conjunctivitis if it enters the eye in any appreciable amount and is irritating to the mucous membranes of the nose and throat. The drying effect on the hands and exposed skin may be quite annoying to some workers. Absorption into the body is not great and will produce no harmful effects; I am tempted to say it may be beneficial to many workers.

Carbonate of Lime Not Injurious

Carbonate of lime or whiting is used in large quantities as a filler and for certain qualities it produces in the finished product it is used in great quantities as a dusting powder. The exposure to the dust by workers is great, but I can see no hazard. In fact, there is evidence to show that the original stone cutters (3) working in limestone knew nothing about stone mason's disease nor a process now known as silicosis with tuberculosis. This did not appear until they used millstone or hard sandstone which contain quantities of free silica.

Magnesia appears in the form of silicate in talc, soapstone and asbestos, and also as the oxide carbonate. This is used largely as a filler and dusting powder. The material is usually very fine and has a rather low Sp. Gr. 2.2 to 2.7 and will fly rather easily, causing a rather high percentage of dust in and about the mill room and storage bins. Workers exposed to this dust are apparently not affected to any appreciable extent. The ordinary product

(Continued on Page 74)

STABILITE

The Age Resister—

STABILITE

Stabilizes and evens the working of your compound from first mixing to final cure.

STABILITE

Stabilizes the cure, making it possible for you to cure different sized tires in the same heat without overcure.

STABILITE

Stabilizes life and wear of your products wherever used by resisting age, heat and sunlight checking.

Write or Wire for samples and graphs.

Manufactured and Sold

By

The C. P. Hall Company

Akron **Ohio**

contains a small amount of free silica and theoretically should show evidence of changes in the lungs if exposure is carried on for a period of years. This does not seem to appear. The dust will produce symptoms in those individuals who are affected with faulty nasal passage, causing a mild chronic rhinitis due to the drying of the nasal secretions and will require a change from this type of work. Men suffering from chronic bronchitis will also find work of this nature undesirable. The absorption of magnesia is essentially nil and we have no evidence of poisoning.

Silicates May Be Cause of Silicosis

Aluminum is used in the form of silicates largely as fillers. We have aluminum flake, a silicate and oxide compound; clay, largely an aluminum silicate; mica, the complex silicate of aluminum; potassium and magnesia with occasionally calcium; pumice stone; silicate of aluminum, potassium, magnesia, calcium, iron and sodium. These all may contain small amounts of free silica, but the quantity is relatively low. It might be said here that with the increasing incrimination of dust with reference to destructive changes in the lungs, that any possibility of silicosis is worthy of note. It seems that a recent case of pneumonoconiosis (4) was judged as occupational in which the exposure was to substances containing very small amounts of free silica, if any. Reference is made to definite cases of silicosis (5) occurring in workers making brick from clear sand or essentially pure silica, while a neighboring community manufactured brick from a sand containing 16 per cent clay or organic matter showed essentially no changes. Did the organic matter or clay reduce the effect of silica, or was the free silica in the rust much less? If clay will decrease the effect of silica then we in the compound room may feel safe, as the percentage of free silica in material used is comparatively small.

Barium is used both as the carbonate and the sulfate. It is in both cases very fine, but not particularly dusty. It is essentially non-absorbable and thus non-toxic. We consider that there is no hazard to health.

At times rather large quantities of infusorial earth or Stoughton's earth are used as fillers. This is a fine white to pinkish or brownish powder. Sp. Gr. 1.66 to 1.95. The best grades are very nearly pure silica and thus we must consider a slight risk from the silica. If it takes 12 to 15 years to produce definite changes in the lungs from free silica in South African gold mining districts, (6) how long will it take to produce similar changes in our compound rooms where the dust concentration is much less? It is undoubtedly true that the size of the particles of dust are capable of producing symptoms eventually, if the exposure is sufficiently great. Many dusty substances are used for coloring. We will first mention:

Carbon Black. This is one of the most objectionable substances used in compounding. It is practically entirely a pure carbon product as used today, and no known hazard is reported insofar as ingestion is concerned. Taken into the lungs it of itself is harmless. Externally it is a very dirty, oily substance to handle, and a worker can rarely get cleaned up after his day's work even with a warm shower bath. It may contribute to the formation of disturbances of hair follicles, but no definite information is at present available to substantiate this.

A few companies are supplying their carbon-black workers with a thin soap paste which is applied before going to work and readily comes off later with a warm shower bath. This removes the objectionable factor to the worker.

Red Oxide of Iron is largely used for red colors. This dust is fairly finely divided and will fly in ordinary handling. I can see no danger other than the quantity of dust inhaled. I believe this is essentially negative.

Antimony is used as the Golden Suphuret for golden yellow. Antimony pentasulfide—for red colors. Its use has been closely associated with both lead and arsenic; as a result the symptoms supposed to be due to antimony poisoning may be caused in part by lead or arsenic, but we accept the following as definite symptoms. It is irritating to the skin and may cause a form of eczema or dermatitis. It first appears as vesicles and pustules and may even ulcerate. It is doubtful if such could occur in our industry with ordinary use. It is irritating to the mucous membranes, producing mucous discharges from the nose and small ulcerations about the mouth and with marked gastro-intestinal symptoms, loss of appetite, abdominal distress, cramps and diarrhoea. It is doubtful if absorption causes any central nervous system lesions. I believe that the use of antimony is much less than formerly because of the fear of poisoning and production of dyes which are less toxic and will readily give satisfactory results in much smaller quantities. The precautions necessary are: care in weighing out compound and cleanliness in hygiene of worker.

Chromium is used in three colors, all of which may be a source of symptoms. Chrome Blue, a chromate of potash; Chrome Green, a sesquioxide of chromium; and Chrome yellow, usually the chromate of lead. Chromate of zinc and strontium may be used. Chromate of lead is probably the most toxic, because of the possibility of lead poisoning, but the others are capable of producing an irritation of the mucous membranes and ulcerations. No definite internal poisoning has been made out. Therefore care in handling the relatively small amount of chromium used in the ordinary plant would seem to be sufficient protection.

Cadmium Sulphide is used for yellow in rubber to a limited extent. Cadmium is capable of producing irritation of the mucous membranes and a gastritis, but since the cost has limited its use in rubber, it is not considered a serious hazard. It must depend upon absorption.

Yellow Ocher sometimes used, but it is not a hazard. It is a combination of iron oxides in clay.

Certain amounts of so-called mineral rubbers are used in compounding. These are bituminous substances, all having some amount of plasticity. I have been unable to find any reference to toxicity, and consider them harmless.

Effect of Miscellaneous Materials

Various oils are used as rubber softeners. Most oils are vegetable oils, but we find a few mineral oils. I have failed to find any reference to toxic symptoms due to oils. They are naturally soothing to the skin, but may produce skin rashes if contaminated with pathogenic bacteria.

A few acids are used in the rubber industry, but very few in compounding. I am going to mention Stearic and Oleic acids for a reference (7) is made to their use in connection with litharge. It seemed that the fatty acid-lead compound produced marked skin changes when used. If this is to be used, gloves to protect the worker should be furnished.

We next come to the resins and pitches. These are essentially semi-solids and practically free from health hazards. This group contains tar and we are hearing a lot about the possibility of skin cancer from tar. I feel we are essentially free from this because of the relatively small amount used and the fact that it is neither in fine particles nor sufficiently hot to give off fumes.

We last come to what is probably a fairly dangerous

(*Concluded on Page 76*)

Develops New Internal Rubber Mixer

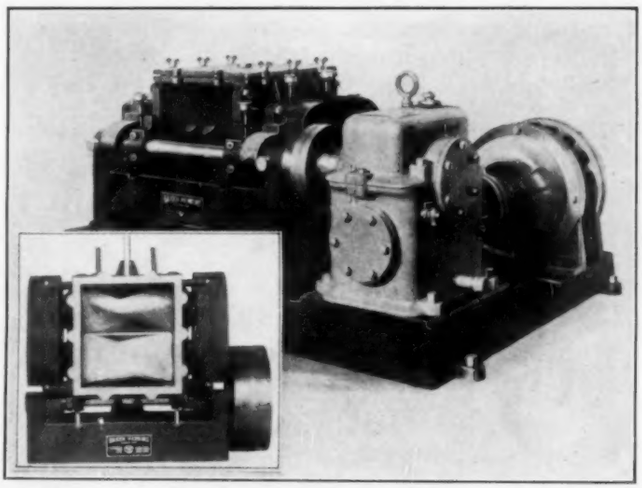
Werner & Pfleiderer to Introduce New Type of Mixer for Both Factory and Laboratory — Many Advantages Claimed for New Equipment—Only Laboratory Machine Now in Use in U. S.

A NEW line of internal rubber mixers, both in laboratory and production models, is being introduced to the rubber trade by the Werner & Pfleiderer Division of the Baker Perkins Company, Inc. The works of this company are located at Saginaw, Mich., but the sales and information on this rubber working equipment, like the other rubber machinery items which the company has made in the past, is being handled from the New York City office at 250 Park Avenue.

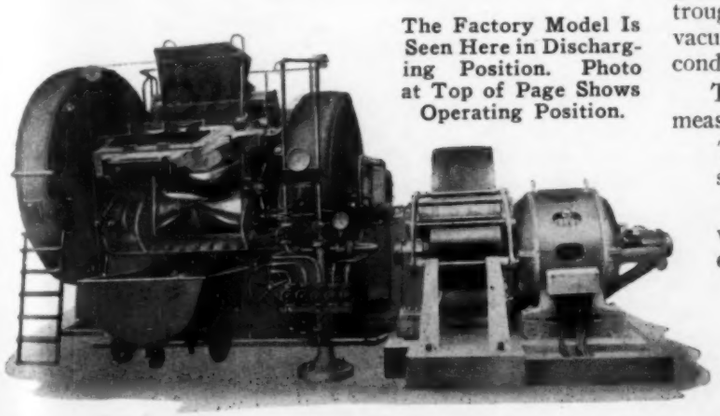
The experience which Werner & Pfleiderer have had in the manufacture of kneading, shredding and mixing machines for various lines of manufacturing has made it natural that they should take up the manufacture of internal mixers for the rubber industry. They claim that the machine which is now being turned out has some advantages over internal mixers which have been available to the rubber industry heretofore.

The internal mixer has established itself in the rubber industry through such desirable features as automatic operation, uniformity of product, reduction of the accident hazard, high productivity per unit of power consumed and per unit of space occupied, good temperature control and reduction of the dust nuisance. The manufacturers of the new machine say that their equipment adds to these advantages a refining action approaching the effect to be had on the best open mills. Improved design is claimed to result in the stock being constantly sheeted out and rolled up and all portions of the batch uniformly worked without the necessity of applying any top pressure to keep the batch confined to the rolls. Provision is made for observation of the batch as mixing progresses.

The laboratory model of the new mixer, which is shown in one of the accompanying illustrations, has its two rotors set in a jacketed trough which is 10 in. by 11¼ in. This shell may be used for circulating steam or water or other heating or cooling medium. For work involving high heat, gas burners may be placed directly under the trough. The trough cover is so fitted that work may be done under vacuum or under internal pressure, it being felt that these conditions should be available in laboratory work.



The Laboratory Model of the W. & P. Internal Mixer. It Is Shown Here With Motor and Speed Reducer on One Bed-Plate. The Insert Shows the Rotors in Trough



The Factory Model Is Seen Here in Discharging Position. Photo at Top of Page Shows Operating Position.

The floor space required for the laboratory model measures 28 in. by 25 in. Drive is by belt or direct motor.

The model illustrated herewith has a motor and worm speed reducer in place. The weight is 315 pounds.

The factory mixer is built in two sizes, the larger of which has a working capacity of about 50 gallons, equivalent to batches up to 650 pounds. The smaller model has a capacity about one-half as great. The rear rotor in both models is set a little higher than the front one. The front wall of the trough is hinged and counterbalanced to serve as the discharge opening. When this wall is raised the in-

terior of the machine is readily accessible, but the rotors may be run backward to assist in discharge. Cooling or heating of the batch is provided for as in the laboratory mixer. Rubber is fed into the mixer at the top from a leading step and powders are added automatically from a box above the trough.

The duration of the mixing period in the large machine ranges from 20 to 40 minutes. The power consumption is reported to be from 150 to 250 H.P. according to the mix. This machine, which weighs 88,000 pounds, requires floor space of 229 in. by 192 in. The height is 146 in. The smaller factory model occupies a space 163 in. by 118 in. and is 128 in. high. The height to the top of the trough in the smaller model is 70 in. and 96 in. in the larger.

Several of the Werner & Pfleiderer laboratory mixers are already in use in the United States, but the factory models are just being introduced and none has as yet been installed. However, about a half-dozen of the production machines are in use in Europe where they have received a thorough test and are reported by the manufacturers to have performed satisfactorily in every way. These machines were manufactured in the German plant of the company.

Health Hazards of Compounding Ingredients

(*Continued from Page 74*)

group of materials—solvents. These have been very adequately considered in recent meetings and I feel that as their use is elsewhere than in the compound room, mention should not be made here other than to say that there have been five cases of chronic benzol poisoning treated at the Massachusetts General Hospital in Boston during the year 1927. We are thankful that none were in the rubber industry, but one is attributed to the use of a certain brand of rubber cement (8).

Reference was made to certain coloring materials. Today many aniline dyes are coming into use. Insofar as I know, these will introduce no appreciable hazard.

In general it must be said that the question of health hazard is inversely proportional to the following factors:

1. Plant—planning and department layout.
2. Plant—cleanliness, sanitation and ventilation.
3. Employee protection: 1. protecting clothing; 2. washing facilities—showers, etc. 3. employee education.

Lest you misinterpret the purpose of this paper, it should be said that all substances listed are not Health Hazards. In fact, there are less than half a dozen substances used which are capable of jeopardizing an individual's life. This list was compiled for the purpose of making available a source of information which might account for certain symptoms and skin rashes which at times will occur in rubber workers. Early diagnosis and protecting of the employee will result in less lost time from work and fewer controversies over cases which may be considered of industrial origin. The industry today is essentially free from lost time caused from substances used because we have attempted to avoid known toxic substances and protect the worker wherever it has been possible.

BIBLIOGRAPHY:

General:
Alice Hamilton—Industrial Poisons.
Hober & Hayhurst—Industrial Hygiene.
Special:
1. Journal Industrial Hygiene—Vol. IX, No. 6, Page 239.
2. Journal Industrial Hygiene—Vol. IX, No. 8, Page 331.
3. Journal Industrial Hygiene—Vol. VIII, No. 10, Page 481.
4. Fisk Rubber Co., Cudahy.
5. Journal Industrial Hygiene—Vol. VIII, No. 10, Page 481.
6. Journal Industrial Hygiene—Vol. IX, No. 4, Page 109.
7. Boston Med. & Surg. Journal—Vol. 192, No. 19, Page 900.
8. Boston Med. & Surg. Journal—Vol. 197, No. 8, Page 292.

Production of Auto Rims Declines

The September statement of the Tire and Rim Association of America, Inc., showing the number of rims inspected and approved, reflects the decline which has been apparent in automobile production over the last few months. This figure is also a good index to the trend in types and sizes of tires being used on new automobiles, for while the total number of rims inspected in September falls far below the total for the same month of 1926, there is a noticeable increase in 18-, 19- and 20-inch balloon rims, indicating the increasing popularity of these sizes of balloon tire equipment over the high pressure type.

The total number of rims inspected and approved during September, 1927, totalled 1,727,122 as compared with 2,365,518 in September, 1926. The total approved inspections for the 9 months of 1927 have been 16,654,121 as compared with 20,054,273 for the corresponding period of 1926. The drop in September is also approximately 100,000 rims from the total of August, 1927, which was 1,825,905. Detailed figures for last month and the nine months ended September 30, are as follows:

Rim Size	Sept. 1927 No.	%	9 Mos. 1927 No.	%
Motorcycle				
28x2½	775	0.0	775	
24x3	1100	0.1	28136	0.2
26x3	1378	0.1	34605	0.2
28x3	2226	0.1	4477	0.0
Total	5479	0.3	67993	0.4
Clinchers				
30x3½	124775	7.2	903837	5.4
31x4	1800	7.2	15309	5.4
Total	126575	7.3	919146	5.5
18" Balloon				
25x3½	—	—	100	0.0
26x4	57212	3.3	659715	4.0
27x4½	11086	0.6	36377	0.2
28x5	34	0.0	276	0.0
Total	68332	3.9	696468	4.2
19" Balloon				
26x3½	33362	1.9	504303	3.0
27x4	114152	6.6	794590	4.8
28x4½	30459	1.8	375608	2.3
29x5	35	0.0	1724	0.0
Total	178008	10.3	1676225	10.1
20" Balloon				
27x3½	59428	3.4	245134	1.5
28x4	306150	17.7	2495363	14.9
29x4½	47156	2.7	358767	2.1
30x5	40081	2.3	307112	1.8
32x6	9059	0.5	31570	0.2
Total	461874	26.6	3437946	20.5
21" Balloon				
28x3½	427913	25.0	5099046	30.6
29x4	96427	5.6	1619913	9.8
30x4½	101275	5.9	988024	6.0
31x5	5532	0.3	108298	0.7
33x6	—	—	36902	0.2
Total	631147	36.8	7852183	47.3
22" Balloon				
29x3½	—	—	146	0.0
30x4	1567	0.1	7378	0.0
31x4½	545	0.0	8357	0.1
Total	2112	0.1	15881	0.1
High Pressure				
30x3½	11692	0.7	87615	0.5
31x4	—	—	4689	0.0
32x4½	13935	0.8	143493	0.9
32x4	23845	1.4	129127	0.8
33x4½	450	0.0	1796	0.0
32x3½	2998	0.2	10150	0.1
33x4	947	0.0	6474	0.0
34x4½	3461	0.2	17565	0.1
Total	57328	2.6	400909	2.4
20" Truck				
30x5	151440	8.8	1216999	7.3
32x6	26259	1.5	197875	1.2
34x7	7405	0.4	55450	0.3
36x8	1171	0.1	16521	0.1
40x10	232	0.0	1138	0.0
Total	186507	10.8	1487983	8.9
22" Truck				
36x7	—	—	1372	0.0
38x8	—	—	30	0.0
Total	—	—	1402	0.0
24" Truck				
34x5	3363	0.2	30038	0.2
36x6	3256	0.2	37011	0.2
38x7	1814	0.1	18100	0.1
40x8	1092	0.1	12297	0.1
44x10	235	0.0	539	0.0
Total	9760	0.6	97985	0.6
GRAND TOTAL	1727122		16654121	

Rubber Exports From Amazon Low

WITH the reported developments in rubber planting in Brazil by Henry Ford, the statistics of recent crude rubber production in the Amazon region have a new interest. The actual shipments from the region have been very light. According to reports from the Department of Commerce, only 50 tons changed hands on the Para market during August and the total exports of crude rubber from the entire Amazon country during the same month amounted to 2,010 tons. Para stocks at the end of August were 1,665 long tons, of which 985 were in the hands of exporters; Manaos stocks totaled 1,380 long tons, of which 1,330 were in the hands of exporters.

The outstanding feature in the exports during 1927 of rubber and caucho from Manaos to Europe is the steadily increasing importance of Hamburg as an importer of Brazilian rubber. Europe generally is gradually taking an increasing proportion of fine rubber and off grades other than balata. Of the total exports of rubber from Manaos to Europe during the first six months of 1927, England received 49 per cent as compared with 51 per cent for the Continental ports.

Manufacturing *and* Testing Rubber-Coated Auto Fabrics

About Two-Thirds of the Automobile Top Material Used in 1926 Was Rubberized—Three General Types of Tests Are Applied to the Coated Fabrics, Including Several Based on Use of Testing Machines

By **M. N. Nickowitz**

Technical Superintendent, E. I. du Pont de Nemours & Co.

ALTHOUGH the automobile-top industry consumes only a small portion of the world's rubber supply, it produced more than 13,000,000 yards of rubber-coated top-material in the year 1926. In addition, approximately 6,000,000 yards of other types of material was used for automobile tops. These include pyroxylin and oil-coated fabrics.

The important ingredients that enter into the manufacture of rubber-coated deck-material are the fabric base, crude rubber, reclaimed rubber, naphtha, sulphur, accelerators, antioxidants, inert fillers such as whiting (calcium carbonate) and barytes, softeners like factice (vulcanized oils) and gilsonite, and varnishes.

In many respects the manufacture of rubber-coated fabrics is like that of cellulose-nitrate-coated fabrics, and the types of fabric used and their preparation are similar.

Care Necessary in Compounding

The preparation of the rubber compounds is of utmost importance. To produce the best type of material, this operation must be as nearly fool-proof as possible. Each ingredient has a definite function to perform, and omissions or substitutions are easily detected. The batches are weighed on precision scales which are checked periodically. The compounds are mixed in either of two ways: Black compounds, such as are used for carriage cloth, are mixed in large internal mixing-machines which are capable of mixing 900 pounds per hour each, the temperature and time of mixing these compounds being carefully controlled by automatic recording-devices. Colored compounds and cements are mixed on steel-roll mills in which two polished-steel rolls run at different speeds.

After mixing, the compounds are strained through very fine screens, which remove any foreign particles that may have got into the compound during the mixing. The strained compounds are then sheeted and permitted to "rest" for 24 hours so that the rubber will set and give a more uniform finished product.

The rubber compound is ready to be applied to the face of the fabric after it has been softened and warmed on the mixing mills. Instead of spreading it on with a knife as is done with Fabrikoid, we calender or roll it upon the fabric. The calender has four carefully ground steel rolls approximately 64 in. wide and 24 in. in diameter. The rolls are equipped with heating and cooling coils. The compound is fed into the calender between the upper two rolls. These sheet the rubber out upon the second roll, from which it passes on to the third roll. A sheet of compound is also placed between the second and third rolls to prevent calender skips. The fabric is passed into the calender between the two bottom rolls and the rubber film is transferred to the fabric.

A quick-drying varnish that dries free from tackiness is applied as the fabric leaves the calender. The coated fabric then passes over an automatic weighing-scale which flashes a signal when the material is over or under weight. This equipment is invaluable in controlling the weight of the finished material.

After the application of the coating the material is ready for embossing. This is accomplished by passing the material between a hard paper roll and a heated steel roll engraved with a suitable pattern. The rubber-coated fabric is then ready for the finishing operation. This consists in applying varnish to it as it is festooned in a large chamber for vulcanization.

Two-ply fabrics, such as are used on most automobiles, usually consist of a sheeting combined with a drill. These fabrics are combined by first impregnating each with rubber cement, which is forced into the interstices of the fabric by two steel rolls. These fabrics are then pressed together by passing them between a pair of rolls, and the resulting two-ply fabric is treated like single fabric, as already described.

Three General Types of Tests

Three general types of test are applied to coated textiles. The first embraces those which may more properly be called observations, as they depend upon the senses, such as feeling, to determine pliability, and sight, to note color, grain, luster and the like. There are few accurate ways of making and recording such observations, which are largely a matter of personal opinion; and perhaps it is not desirable that they should be reduced to an exact qualitative basis.

The second class of tests consists of observations made in the laboratory by the use of machines which give definite qualitative data on the property being tested. These tests are the ones upon which the manufacturer and purchaser usually must depend to determine and record the quality of the goods.

A third class of tests comprises those which depend upon actual service for determination of the desirability of the goods. Such tests are very slow and in general are not very useful in connection with purchase specifications.

The most important test to which the rubber technologist resorts is the stress-strain test on the rubber compounds. Every well-controlled rubber factory determines the quality of the compound from its physical properties as shown by its tensile-strength, elasticity, and permanent set. These tests can be made on both new and aged stock, and give definite quantitative data. Our custom is to con-

---

This paper was read by Mr. Nickowitz before a meeting of the Detroit Section of the Society of Automotive Engineers. It is printed here by the courtesy of the official journal of the Society.

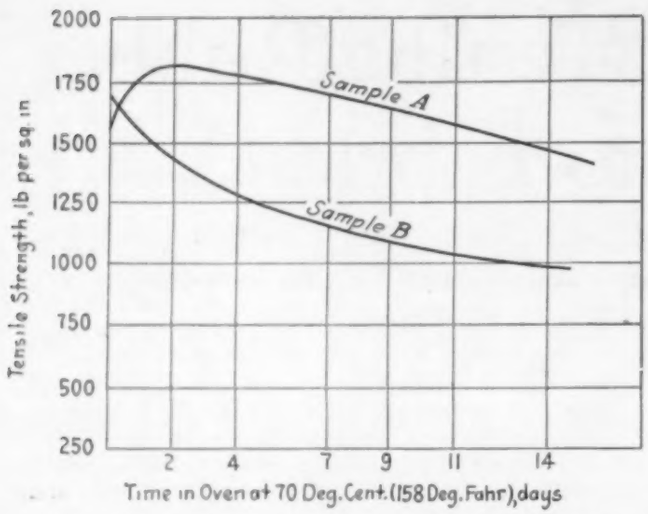


FIG. 1—AGING EFFECT ON TENSILE-STRENGTH OF RUBBER-COATED FABRIC

Initial Appearance and Strength of Coated Fabric Are Not Safe Guides to Its Quality. Sample *A* Shows Approximately 500 Lb. per Sq. In. More Tensile-Strength Than Sample *B* After 4-Days Aging in an Oven at 158 Deg. Fahr., Although before the Aging Test Sample *B* Possessed the Greater Tensile-Strength

duct these tests on naturally aged samples as well as on test pieces that have had their aging artificially accelerated. The tensile properties are determined in the familiar Scott machine. The purchaser is unable to make this test unless he can arrange to secure specimens of the raw compound from the producer, which I believe can be done easily. The Government often follows this practice.

One of the oldest and most common tests applied to all types of coated fabric is termed the scrub test. As formerly carried out, a piece of the goods is grasped between the two hands so that the thumbs lie on top of the goods parallel to each other and perhaps ½ in. apart. The hands are then brought together and, with the piece of goods grasped firmly, it is scrubbed much as one might wash a fabric. The number of complete motions forward and back, counted as one, before the coating breaks, is called the "scrub" of the piece.

Scrub Test Gives Erratic Results

This test naturally gives very erratic results. The strength of the hands and arms of individuals who make this test varies widely. It is known also that the same individual varies a great deal in the performance of the test on different days. It is obviously impossible to accept for the scrub of a piece of goods a single attempt to determine quality of the coating in this way. This test, however, has been very useful and is still used to some extent. The modern successor of the hand-scrub test is the scrubbing-machine. This has two heads in which the sample is clamped. The heads are reciprocated in opposite directions by cranks and connecting-rods driven by an electric motor. The sample folds under a rider hinged to a bar which carries a weight at its outer end. The weight presses certain parts of the coated surface against adjoining parts of the same surface, while the reciprocating heads stretch the fabric and cause the surface to be scrubbed together in much the same way as in the hand-scrub test, but with far greater uniformity.

In selecting pieces for testing, one should avoid cutting them along the edge of the goods. Test samples should always be cut along the warp threads. The piece is clamped firmly in position with the jaws in mid-position. The weighted rider is then let down on the goods and the motor is started by the pull-chain switch. The machine is stopped as often as experience indicates is necessary and the piece is taken out and examined closely for a break in the coating. As the test progresses, the frequency of examination will increase for the purpose of accurately securing the end-point; that is, the point at which the first break in the coating occurs. It is best to make duplicate scrubs.

Scrubbing-machines are useful, not only for determining the initial quality of the goods, but in connection with other tests. For instance, the sunlight-exposure test and the heat-aging test are made much more valuable by applying the scrub test to the goods that have been exposed.

We find that, in addition to a control on compounds that have shown proper physical tests, the scrub test is a good indicator of resistance to abrasion, and we recommend this as a control test for the consumer, particularly if he does not test the compound.

Efficient and rapid aging-tests are of utmost value in determining the ultimate value of any material. Materials that are entirely unsuited for the purpose they are to serve are purchased too often on their initial appearance and quality. The curves in Fig. 1 indicate graphically the fallacy of such judgment. Although Sample B shows a compound whose initial quality as measured by tensile-strength is superior, Sample A certainly is to be preferred. Accelerated aging-tests on rubber-coated fabrics are made in three distinct ways: (a) by aging in an oven at a temperature of 70 deg Cent. (158 deg. fahr.), (b) by exposure to ultra-violet light and (c) by the oxygen-bomb method.

Effect of Light Must Be Considered

For method (a) we are indebted to Dr. W. C. Geer, who pointed out that this test, when used properly, gives an approximate correspondence between accelerated and natural life-tests after 4 days in the oven, 1 day equaling 6 months' natural exposure. This test, however, does not take into consideration the effect of light. We have done some work on the use of the Fade-ometer for this factor and, although we have not yet drawn conclusions as to its relation to natural aging, we have reason to believe that it has a definite place in a well-equipped testing laboratory. We find that it is valuable in testing materials of the same class for deterioration of varnish finishes and for fading. The discrepancies encountered, however, make it imperative always to check these tests with actual exposure.

Test-method (*c*) is very new but has been found especially effective in determining the deterioration of rubber by oxidation. The test was worked out originally by J. M. Bierer and C. C. Davis, of the Boston Woven Hose and Rubber Co. The aging is done by subjecting the rubber to oxygen at a pressure of 300 lb. per sq. in. at 60 deg. Cent. (140 deg. fahr.). This test gives results which indicate that 10 hours of this treatment produces effects equivalent to 1 year of normal aging.

Rubber-coated materials usually deteriorate in the following order: First, the varnish finish begins to check after storage and, second, this is followed by the rubber becoming less and less elastic until it finally cracks when bent sharply. With good material, the latter should not occur within the normal life of an automobile.

Two specimens of rubber deck-material that have been exposed for the same length of time are shown in Fig. 2. The initial quality of both was very nearly the same, but the sample at the bottom shows decided decomposition.

The fold test is made with a machine operated by an electric motor, which stretches the goods and folds it sharply under a 10-lb. weight 40 times per minute. This test is continued until the coating shows a distinct break at one of the folds. The number of foldings required to cause

such a break is taken as the end-point. Fold tests, like scrub tests, can be carried on for a definite period, after which the material is subjected to other tests to determine the effect of vigorous folding or creasing.

This test was designed primarily for testing automobile-top materials, and when so used it usually is preceded and followed by the hydrostatic test, for much the same reason that the aging test is accompanied by the scrub test.

The hydrostatic test was devised for the purpose of determining the hydrostatic resistance of coated fabrics. The material is tested in duplicate or triplicate by clamping sample pieces face inward over flanges on horizontal pipes that are connected with a vertical pipe, into which water is fed at such a rate that the water-level rises 2 feet per minute. When water makes its first appearance on the back of the fabric, which is outside, the water is shut off and the height of the column is noted on a gage glass.

Any good top-material will withstand for a long time a hydrostatic pressure equivalent to 10 feet of water without any leakage. If it resists this even momentarily when new, its hydrostatic resistance is satisfactory. After being subjected to the fold test for a reasonable number of times, say 300, it should withstand a pressure equivalent to 2 feet of water.

Determining Anchorage of Rubber Film

Adhesion of the coating film to the fabric base is commonly spoken of as the anchorage of the material. This property is important and a satisfactory test for it is highly desirable. In the past the anchorage was judged by determining by hand how easily the film could be loosened and stripped from the fabric. Results of hand tests for anchorage depend entirely on the judgment of the individual making the test and, therefore, introduce the undesirable personal equation, as in the case of the hand scrub-test. Hence it is evidence that a test which will yield consistent results, and that can be expressed numerically, is desirable.

After some preliminary experiments, suggested by the Bureau of Standards test of "frictioning" in rubber belting and the like, a procedure was developed that has been adopted as standard for determining the anchorage of the film. Application of this test to rubber-coated fabrics is as follows: By means of a spreader knife or spatula a piece of cotton drill measuring 2 x 8 in. is given two thin coats of rubber cement, compounded of 40 per cent smoked sheet, 4 per cent resin, 6 per cent shellac and 50 per cent benzol, and is permitted to dry at room temperature for approximately 5 min. After the varnish has been partially removed by buffing, a third coat of rubber is applied to a 2 x 8-in. piece of the material whose anchorage is to be determined and which has previously been cut to match the drill with the warp. The sample is then allowed to dry for a short time, after which the two pieces are pressed together evenly and firmly by means of a calender. Following this, the material is allowed to rest for 3 hr. The anchorage is then determined in the Scott or some other make of tensile-strength testing-machine.

The procedure is to separate the two fabrics at one end of the strip and pull them apart for a distance of about 2 in., being careful to have the film of the original material adhere to the coated sheeting. This can be done successfully if care is taken to start the separation properly. The 2-in. portions that have been pulled apart are narrowed to a width of 1 in. so that they will fit the clamps of the machine. They are then pulled apart, in the Scott machine, at a speed of 2 in. per min. It is necessary that the fabrics separate cleanly when being pulled apart. If there is a tendency for the fabric to ravel at the side of the test piece, this must be corrected by cutting the threads, as the raveling causes an appreciable error in the result. Results of the tests are reported as pounds of pull necessary to strip a test piece 2 in. wide. This procedure has yielded very satisfactory and consistent results.

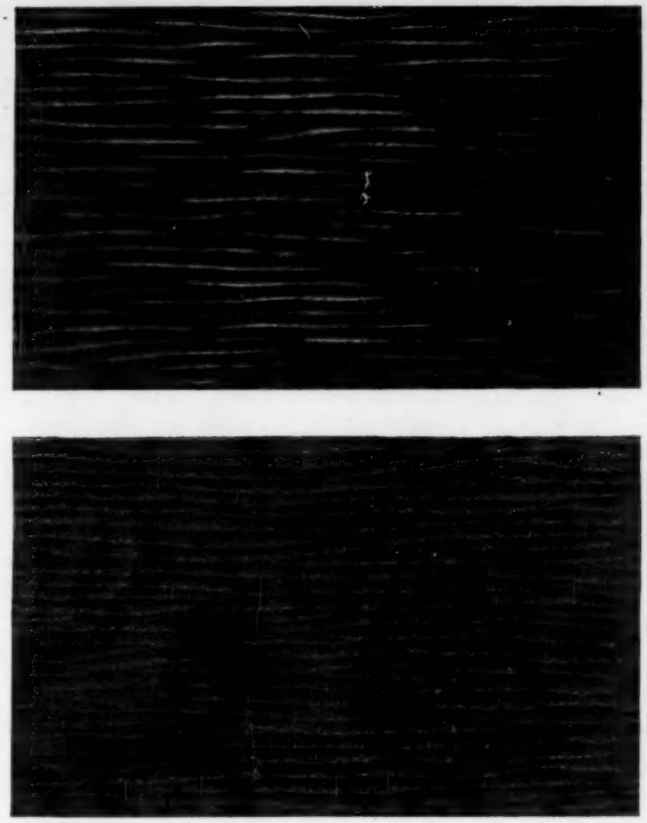


FIG. 2—RESULTS OF EXPOSURE OF TWO SAMPLES OF RUBBER-COATED FABRIC

Both Specimens of Deck-Material Were of Very Nearly the Same Initial Quality and Were Exposed for the Same Length of Time. Whereas the Sample at the Top Shows Little Effect of the Exposure, That the Bottom Shows Decided Decomposition and Cracking of the Coating

To obtain accurate and reliable data on the strength of combining of double-texture material, both before and after aging by heat and weather, it has been found necessary to develop a method of testing under uniform conditions. The anchorage tests required only a little modification to give satisfactory results for strength of combining. The method of operation can be inferred readily from the description of the anchorage test.

When rubber is vulvanized by means of sulphur, only a portion of the sulphur that is added combines with the rubber, and the remainder is held in the rubber while it is vulcanizing. After a time the free sulphur may crystallize out, and the rubber is then said to have "bloomed" or "sulphured up." The manufacturer usually knows the quantity of free sulphur the compound will hold without blooming, and he tests the coating for free sulphur periodically. The purchaser's most practical way of checking for blooming is merely to store a sample in a cool dark place and observe it periodically for this defect.

Exposure tests, in general, may be regarded as accelerated service-tests, as the results obtained give, in a comparatively short time, an indication of the general wearing-qualities of the coated material. This test has been found of greatest value in testing automobile-top materials. The time of the exposure is usually 1 yr., because it is desirable to have the material subjected to the weather con-

ditions of the four seasons. A 1-year exposure is regarded as equal to about 3 years of actual service.

A frame 4½ x 5 ft., having three equidistant cross-members, is made from 3 x 1-in. stock and supported by suitable uprights at an angle of 45 deg., facing south. The sample of material to be tested must be of sufficient size to cover the top of this frame and leave at least 3 yd. for the "retained sample." Observations and tests on the original material are made for the following properties:

Appearance	Smoothness
Lustre	Pliability
Tensile-strength	Resistance to scrub
Hydrostatic resistance	Strength of combining cement

A fold test of 300 folds is also given the material and, after noting its appearance, a hydrostatic test on the folded portion is made.

The material to be tested is placed on the frame and drawn tightly over the edges before fastening, so that a pocket will not be formed that will collect water in a rain. At the end of each 3-months' exposure, a strip is cut from the material on the frame and the tests and observations just listed are repeated on both the exposed sample and a portion of the retained sample. At the end of 1 year of exposure, all the results are tabulated and conclusions are drawn from the data obtained.

It is important that the frames be so located that the material being tested will be exposed to rigorous conditions. It has been observed that exposure in a manufacturing city causes much more deterioration than is produced in clean country air. Owing to the varying conditions at different periods of the season, exposure tests on rubber or pyroxylin goods always are conducted in a way to obtain comparable results. When a manufacturer desires to determine the aging quality of a competitive material, he usually exposes it together with a sample of his nearest comparable quality. Similarly, when he makes a change in compound, his standard sample is exposed together with the new sample, so that comparable data are always available.

Edge-Cracking Test Is Important

The edge-cracking test is applied only to rubber-coated fabrics. It is a very important test on automobile-top fabrics, because it simulates the effect of tension, creasing, and deterioration due to weather exposure, on turned edges, one of the first places where a top shows wear. This test is performed by cutting a sample of the material 13 x 2¾ in. with the length parallel to the warp. The material is then suspended over a sharp edge, with the coated side out, in the form of a loop within which is placed a 2½-lb. weight. This sharp edge should be made of metal, preferable brass, and the bend of the goods over it should form an angle of 60 deg.

This test is comparative only, and its duration is dependent upon weather conditions as well as upon the quality of the material tested. It is continued until definite results are obtained.

Tensile-strength of coated or uncoated fabrics is determined by machines designed especially for this purpose and readily available. The method of making the tensile-strength test has been well standardized and has been described in so many places that it is unnecessary to repeat the directions here.

The information given by this test is of great importance where the material is to be subjected to much stress, as in upholstery and automobile tops.

The procedure followed in the routine analysis of rubber-coated material consists in first stamping out with a die a sample 4 x 3.81 in. The weight in grams of a test piece of this size, when multiplied by 3, is equivalent to the weight of the material in ounces per square yard. First the film is removed with benzol or naphtha, then the fabric is dried and weighed, and the difference between this weight and the weight of the test piece is the weight of the coating. Weight of the coating is expressed in ounces per running yard and that of the fabric in yards per pound.

In the case of double-texture fabrics, the weighed sample, after the coating is removed, is treated with "paraffin white spirit"; that is, distilate at 130 to 220 deg. cent. (226 to 428 deg. fahr.) from motor gasoline. Then the two fabrics are separated. The cement is freed from the fabrics by scraping them with a spatula and extracting the remainder with more solvent.

Fabric-analysis tests are of great importance because two pieces of material may be very similar in total weight and appearance, yet different in cloth structure. The kind of dye used on fabrics is also important, especially on the type of material now used on sport cars. We recommend testing this material to make certain that it is in accordance with specifications. Our attention was called recently to an instance of substitution of sulphur-dyed material where Indanthrene dyes were specified. This made a difference of about 20 cents per yard in the cost of the finished material. The sulphur-dyed material, in the color furnished, was entirely unsatisfactory.

Not All Tests Need Be Used

Although we feel that the tests herein described clearly indicate the value of most coated textiles, it is not necessary to employ all of the tests in the case of any coated fabric for a specific purpose. The purchaser need specify and apply only those tests which indicate the qualities necessary for deck material for his individual uses. Some of the tests can be written into specifications; others are of greater use to the purchaser in deciding what makes or types of automobile topping are best; that is, they are broader tests than are required for specifications.

There is reason to believe that more careful examination of materials of the type under discussion will assure the purchaser of securing material well adapted to his needs and will enable the manufacturer to interpret the requirements of his customer more accurately. It seems likely that there will be greater satisfaction on the part of all concerned if they have a definite appreciation of the characteristics of topping materials. The series of tests described will contribute a great deal toward this understanding.

Hauser Lectures in London

The Gow course of six lectures on "The Colloid Chemistry of the Rubber Industry," which were postponed from last April will be given by Dr. E. A. Hauser, in London at the University College, during the middle of November. The subjects of the lectures will be as follows:

1. "Historical Introduction. Rubber Latex and Its Colloidal Chemistry."
2. "Tapping of Latex, Its Coagulation, Evaporation, Concentration and Preservation."
3. "The Structure of Rubber, Joule Effect, Density, Racking of Rubber, etc."
4. "The Processes of Mastication, Calendering, Dissolution of Crude Rubber and the Preparation of Rubber Mixes with Special Reference to the Problem of Compounding Ingredients."
5. "The Problem of Vulcanization."
6. "Future Prospects, the Synthesis of Rubber, Special Problems From the Point of View of the Plantation and Rubber Manufacturing Industry."

QUOTATIONS ON RUBBER EXCHANGE REMAIN SAME

Prices Fluctuate Only Slightly in Highly Speculative Market, With Nearby Positions Around 34 Cents—Market Is Apparently "Pegged" By Pool Operations

Trading on the New York Rubber Exchange during the last two weeks has been characterized by a firmness which is phenomenal in the face of the crude rubber situation. Daily variations in price levels for spot and future deliveries have been slight, but in the last week the list in general has shown a steady gain on the strength of determined bullish interests, which are reported to represent the "pool." The resultant levels are manifestly "pegged." The lowest during the last fortnight for spot and October was 33.50 which was maintained on October 8. The high figure went to 34.40 on October 17.

It is apparent that the market is being artificially maintained at around 34 cents. All indications point to an extremely unfavorable statistical position with increased stocks in both London and New York, and with a very low consumption in the industry during September. With the excess in imports of crude rubber over consumption increasing during the last few months, a definite economic situation is present which should depress the market prices. The apparent "pegging" of the New York market has kept the London market stimulated and no wide changes have occurred. In fact, the London market has followed, rather than lead the local market for sheveral weeks.

A table of the current daily closing quotations on nearby and future positions is given below.

TENNIS ASS'N CONSIDERS MAKING OFFICIAL BALLS

The revolutionary proposal that the British Lawn Tennis Association should turn its attention to the establishment of an official factory for the manufacture of lawn tennis balls has been receiving new consideration in recent meetings of the council of the Association. This proposition has been before the council before, but has been rejected on the ground that there was no reason to believe that the Association could manufacture a ball, available only to affiliated clubs, at the proposed price of $3.50 per dozen without considerable financial loss. It is believed in the British sporting goods trade that the proposal in its resurrected form is to subsidize one of the smaller manufacturers by guaranteeing him against loss.

Late Stock Prices

	Oct. 18	Oct. 4	1927 High	1927 Low
Ajax	8	8¼	13	7½
Firestone	156	158	167	117
do 6% pfd.	107	106	107⅞	107
do 7% pfd.	107½	104½	107½	98½
Fisk	15½	15⅝	20	14⅞
do 1st pfd.	95	95	100	81
General	160	170	180	140
do pfd.	102½	110½	110½	99¼
Goodrich	79	81	84⅜	42¾
do pfd	105	108	109¾	95
Goodyear Com.	60½	63¼	64	50⅝
do pr pfd.	95½	95½	118⅛	104½
do pfd.	119	119⅞	121	98½
Hood	39⅜	41½	47	39⅜
India	17	21	30	17
Intercontinental	12⅜	12⅜	15¾	11⅜
Kelly Springfield	26¾	28¼	30¾	9½
do 1st pfd.	87¼	90	96	44
do 8% pfd.	92½	95	98	35
Lee	12⅞	13¾	14⅞	7
Miller	25½	28	36¾	25½
do pfd.	99	99½	104	99
Mohawk	20	20	25	15
do pfd.	60	60	65	65
Seiberling	35	38	38⅜	21⅜
do pfd.	101	101	103	96
Star	1½	1½	2	1½
U. S. Rubber	51½	56½	67⅛	37¼
do pfd.	100⅝	101½	111⅜	85¾
U. S. Rubber Reclaiming	....	....	12	12
do p pfd.	....	....	24	24
do series A	....	....	15	15

Pennsylvania Rubber Sign

The Pennsylvania Rubber Co., of Jeannette, Pa., has recently erected a sign on the roof of the plant reading "Vacuum Cup Tires," the letters of which measure eight feet in height, while the first letter "V" measures twelve feet. The sign contains 1,395 220-volt lamps, and is 135 feet in length.

BUYS UNITED AND GLOBE FACTORY EQUIPMENT

L. Albert & Son, rubber mill machinery dealers of Trenton, N. J., have purchased the machinery and equipment of the United & Globe Rubber Corporation, also at Trenton. The United and Globe plant was devoted exclusively to the manufacture of all kinds of mechanical rubber goods and was widely known for its air brake hose, belting, matting, etc. The purchase includes the complete equipment of the plant. Dismantling will begin immediately and the equipment is now being offered for sale.

RUBBER COMPANY SHARES ACTIVE ON EXCHANGES

Little change can be noted in the quotations on rubber manufacturing company stocks in the New York and Cleveland markets during the last two weeks. All the issues have been more or less active, but have followed the general trend of the markets without showing any individual movement. Within the last few days the general tone of the New York Exchange has been bearish and rubber shares have suffered slight declines along with the entire list.

Firestone Tire & Rubber Co.'s 7 per cent preferred went to a new high level at 107½. Hood Rubber went to a new low for the year at 39⅜. Miller Rubber common also trailed down to 25½, a new low, while the preferred stock, out of sympathy, touched 99, the first time it has been below the 100 mark. Star Rubber declined to 1½. None of the stocks showed any pointed weakness, however.

No further financial statements have been made public by the various rubber companies since the last quarterly reports, the majority of which showed the companies to be in good financial condition.

Carbon Black for Canada

Imports of carbon black into Canada during the month of July show a considerable increase over imports in the corresponding month a year ago. July, 1927, imports totaled 794,475 pounds, valued at $51,063 compared to 473,591 pounds valued at $36,319 in July, 1926.

New Exchange Members

Philip P. Bedford, of P. P. Belford & Co., Inc., and Russell W. Earle, of the Earle Brothers Corporation, both of New York, have been admitted to membership in the Rubber Exchange of New York.

Closing Prices on Rubber Exchange of New York, Inc.

OCTOBER 6 TO OCTOBER 18, 1927

Date	Spot	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Sales*
Oct. 6	33.60	33.60	33.60	33.70	33.80	33.90	34.20	34.40	34.50	34.70	34.80	35.00	35.20	218
7	33.50	33.50	33.40	33.60	33.80	33.90	34.20	34.40	34.50	34.70	34.80	35.00	35.20	194
8	33.50	33.50	33.60	33.60	33.70	33.80	34.70	34.30	34.40	34.60	34.80	35.00	35.50	18
10	33.60	33.60	33.60	33.70	33.70	33.70	34.10	34.30	34.50	34.70	34.80	35.00	35.20	74
11	33.80	33.80	33.70	33.80	33.90	34.10	34.30	34.40	34.60	34.80	35.10	35.20	35.40	293
13	34.00	33.80	33.60	33.80	33.90	34.10	34.30	34.40	34.60	34.80	35.10	35.20	35.40	151
14	34.00	33.90	33.60	33.90	34.00	34.20	34.40	34.60	34.70	34.90	35.10	35.30	35.50	527
15	34.10	34.10	33.80	34.10	34.20	34.40	34.60	34.70	34.80	35.00	35.20	35.40	35.60	165
17	34.30	34.40	34.20	34.50	34.60	34.80	35.00	35.10	35.20	35.40	35.50	35.70	35.90	395
18	34.30	34.30	34.30	34.60	34.70	34.90	35.20	35.30	35.40	35.60	35.80	36.00	36.20	1113

(*) In lots of 2½ tons each

Announcing

The BRIDGWATER LIGHT WEIGHT CORE SECTIONS

A light alloy section integral with a steel base: 50% lighter than cast iron.

Eliminate your breakage and cutting at trim line.

Made in all sizes for both low and high pressure equipment.

Details and Prices Furnished on Request

PATENT PENDING

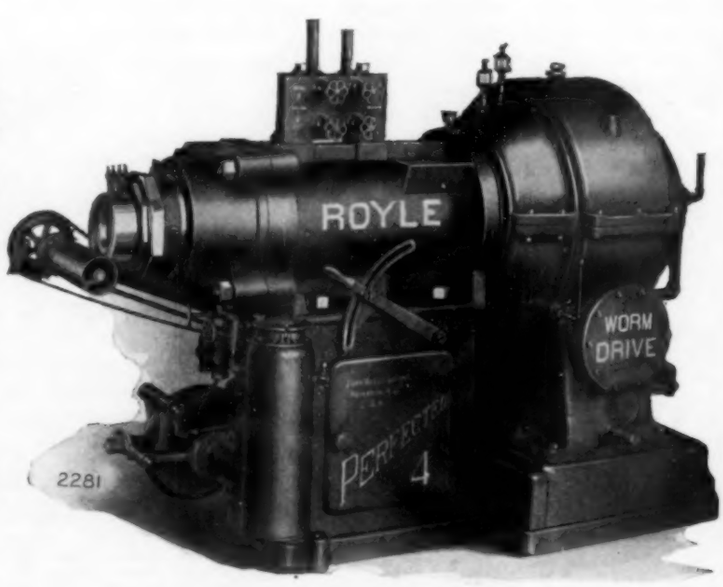
The Bridgwater Machine Co.

Tire Molds AKRON, OHIO *Special Machinery*

ROYLE 6-Inch INNER TUBE MACHINE

This is the machine that made the tubing of inner tubes a commercial success.

Today more rubber manufacturers than ever before realize that "it pays to stick to Royle machines" —the proven product of 47 years.



JOHN ROYLE & SONS, Paterson, N. J.

Represented by **Akron Rubber Mold & Machine Co.**

EDITORIAL COMMENT

The Rubber Exchange

IT is interesting to note that in the economic readjustments working out of the post-war period various commodity markets have shifted from London, Paris and Berlin, which used to dominate the world price levels of raw materials, to the largest consuming market, which in most cases is the United States. Nitrate, for instance, is no longer controlled from London. Paris has ceased to be the dictator of silk and Berlin is no longer supreme in dyestuffs.

There was a time not long past when London dictated the crude rubber price on the New York market. This was the case even in the early days of the New York Rubber Exchange. But in the process of the new economic readjustment, crude rubber trading has sought its own level, so to speak, and has come to know the chief consuming country as the legitimate market for the most advantageous sale of its commodity.

As a result, the prices on the London Exchange no longer dominate New York and in a number of recent instances, the New York Exchange has not only deviated from the London trend of the market, but has acted independently to the extent that London has actually followed New York.

Today, for instance, the optimism in London, stimulated by the excellent returns which have previously come from rubber shares and confident in the fallacious belief of "Restriction relief," is attempting to stage a bullish movement in the face of a decidedly adverse situation. That this effort is not finding sympathy in the United States is reflected by the latest quotations on the New York Rubber Exchange. Through the agency of the Rubber Exchange, the American rubber manufacturers are drastically demonstrating that America will have its rightful way as regards the raw materials which it uses in predominant quantities.

Thus far, therefore, the Rubber Exchange has been a great factor in transferring the balance of power in crude rubber trading from London to this side of the Atlantic. There appears to be no present circumstance to prevent it from increasing its power and usefulness in its third year.

A Busy Rubber Fortnight

FROM a rubber trade journal point of view, it can be truthfully said that rubber news is "breaking and breaking fast." In the last fortnight we have Ford clinching a deal for 4,000,000 acres of land in Brazil for the development of rubber plantations; Goodyear begins production at their Australian factory, recently constructed in record-breaking time; Firestone carries on in Liberia and sends out more of his promising young men to turn African jungles into rubber estates; London rubber stocks reach a new high record along with a new high figure for stocks on hand in the United States; the New York Rubber Exchange reports that last year's crude rubber transactions amounted to $150,000,000, involving 180,000 tons of rubber; the Restriction act continues ineffective, is battered back and forth in debate in England and the colonies, but remains unchanged; Harrisons & Crosfield, as rubber estate owners and operators, pay a 40 per cent cash dividend; Alfred P. Sloan points out the world automotive replacement market alone now amounts to better than 4,000,000 cars; a Department of Commerce survey shows tire stocks in dealers' hand to include about 600,000 more casings than they did a year ago. All these things, and many more as well, have transpired in the busy, expanding rubber world in the last two weeks.

Most of the just-named items of news relate to an aspect of the rubber industry which is of transcending importance—the need for raw material, in ample quantity and at a fair and stable price. The scenes change quickly these days on the crude rubber stage—and back-stage as well, one suspects when he studies the crude rubber market. The whole situation is so kaleidoscopic, frequently so paradoxical, that it not only puzzles the economist, but bewilders the layman and sets at odds the best minds of the industry.

But through all the news there stands out the fact of rubber's increasing importance, its place as a world commodity, its tremendous present and its greater future. The keynote of the industry is optimism and new encouragement for that attitude is found in each day's news.

The RUBBER AGE

Published on the 10th and 25th of each month. The Only Twice-a-Month Rubber Publication.

THE PALMERTON PUBLISHING CO., INC.
Publication Office, 1-3 Peace St., New Brunswick, N. J.
Editorial Office, 250 West 57th St., New York City
Telephones: Columbus 6430, 6431, 6432

THE RUBBER AGE is published on the 10th and 25th of each month by The Palmerton Publishing Co., Inc., a New York corporation. P. L. Palmerton, President; Earl D. Osborn, Vice-President and Secretary; L. D. Webster, Treasurer. Publication Office, 1-3 Peace St., New Brunswick, N. J. Subscription rates: Domestic, $2.00 a year; Canada, $2.50; foreign, $3.00; single copies, 20c. Advertising rates on application.

Contents Copyrighted 1927 by The Palmerton Publishing Co., Inc.

Editor.....P. L. Palmerton
Assistant Editor.....J. P. Bushnell
Business Manager.....Peter P. Pinto
Circulation Manager....J. T. McCaffrey

Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

DE MATTIA

Double Power

BUFFING MACHINE

and Building Stand

Speed — Accuracy — Power

For

AIR BAGS and TIRES

The added service to be had from a recovered air bag, or the success of a retreaded tire, depends first of all on the accurate removal of the dead stock or preparation of the old surface to receive the new stock.

The especially designed buffing wheel with power and control added accomplishes both results at one operation.

"Tire Building Equipment Since 1909"

De Mattia Brothers, Inc.

Clifton, N. J.

Charles T. Wilson Co., Inc.

44 Beaver Street — New York

Importers of

CRUDE RUBBER

Members Rubber Exchange of New York, Inc.
Members Rubber Exchange Clearing House, Inc.

AKRON OFFICE: 507 Second National Building

Telephone Main 3799

The HARSHAW FULLER & GOODWIN CO.

1610 Hanna Bldg.—Cleveland, Ohio

CHEMICALS-COLORS-PIGMENTS

For

RUBBER MANUFACTURERS

GLYCERINE

LEAD OLEATE — LITHARGE
CHROMIUM OXIDE — RED LEAD

ANTIMONY SULPHURET

BLANC FIXE — HYDRATED LIME

CARBONATE—MAGNESIA—HEAVY CALCINED
PINE TAR — ROSIN OIL

"DIAMOND" —MICA— "SILVER SHEEN"

WAREHOUSES

Cleveland - New York - Philadelphia
Chicago - Elyria - Trenton

NEWS of the INDUSTRY

Financial–Business
Building Operations
Personals
New Products

HARRISONS & CROSFIELD INCREASE EARNINGS

Company Shows Substantial Profits in Spite of Falling Prices of Rubber—40% Cash Dividend Declared—Eric Miller Optimistic on Future.

The latest financial statement of Harrisons & Crosfield, Ltd., London, the well-known rubber estate managers and plantation owners, shows a substantial gain over last year.

Speaking at the annual meeting of the company, Eric Miller, chairman of the board of directors, commented on the general situation of the rubber growers in connection with the falling prices of rubber, but said, "There is a tendency to take a too gloomy view of the rubber situation at present owing to the substantial use of reclaimed rubber in the United States. Absorption of crude in 1927 has been satisfactory. There appears to be no increase in the stocks of finished tires. Many orders must be held back until the new Ford model is ready."

Dealing with restriction, he said that the present stocks of rubber in London are generally regarded as more than ample, but with tightening of assessments and prevention of smuggling, thus making scheme effective, existing stocks would not be too large.

Profits Show Gain of 8%

Despite the lessened prosperity of the rubber-growing industry, the net profits of the company increased during the last financial year by £26,419 ($132,090), or 8 per cent. The 1927 figure is £365,532, in comparison with £339,113 for 1926, and £276,902 for 1925. These figures for 1926 and 1927 are after deducting income tax. The favorable figures for the past two years are a reminder of the extensive business conducted by the company outside the rubber industry, although they are best known in connection with rubber. There is no doubt that the undertaking is now benefiting to an increasing extent from the large sums it has devoted within the past decade to planting up fresh acres of rubber. As these have come into bearing, such outlays have become revenue producing.

In addition to the cash dividend of 40 per cent, less tax, the holder of 100 deferred shares has the option to subscribe at par for 12 new deferred shares quoted at 7⅞ with dividend and rights. Ex dividend and rights the new shares are valued at about £7 ($35) per share. Deducting £1 payable by shareholders, the value is £6 per share, or upon a holding of 100 shares, £72. Including the dividend, each 100 shares on this basis thus receives 104 per cent, free of tax.

RESTRICTION NOT TO BE CHANGED ON NOV. 1

There will be no changes made in rubber restriction on November 1, the British Colonial Office announced on October 20. The sixth year of restriction begins on that date, and in view of the comparative ineffectiveness of the regulations which have been in force during the last year, it had been anticipated in all quarters that new regulations would be promulgated on November 1. Instead, there will be no immediate change, but the Colonial Office reserves the right to make changes on February 1 when the second quarter of the sixth year will begin. Meanwhile, the exportable percentage continues at 60 per cent.

Garlock Anniversary

The Garlock Packing Company, Palmyra, N. Y., celebrated its fortieth anniversary in September. A complete line of rubber packings is manufactured as well as many other sorts of packings and other molded rubber items. The active business of the company is under George L. Abbott, vice-president and general manager. The company has branch factories in four cities in the United States and one in Canada. Twenty-two district sales offices are maintained in this country.

New Buffalo Rubber Co.

Notice of incorporation of the Progress Manufacturing Corporation of Buffalo, N. Y., indicates that this concern will engage in the manufacture of pneumatic tubes and other rubber products. The capitalization is placed at $50,000.

STARTS PRODUCTION IN AUSTRALIAN PLANT

New Factory of Goodyear Tire & Rubber Co. Begins Operations Within Less Than Eight Months From Start of Construction—Located at Sydney.

The plant of the Goodyear Tire & Rubber Company at Sydney, Australia, began production operations October 10, less than eight months from the time the ground was first broken for the construction of the factory. Announcement of the start of the Australian plant was made by officials of the Goodyear Company at the recent interplant conference held in Akron during the week of October 3.

Ground for the new production unit was broken on February 24. Installation of machinery and equipment was completed by October 1. American speed in constructing the new plant surprised native Australian engineers and workmen.

Opening of the new plant brings the number of tire factories owned by the Goodyear Company to six. There are two at Akron, one in Los Angeles, and two in Canada. A seventh will start producing tires in Wolverhampton, England, before the end of the year.

The new Australian unit will have an initial capacity of 1,000 tires and tubes a day. It will be operated under the direction of a staff of technical and production experts from other plants of the Goodyear Company, with Australian labor personnel.

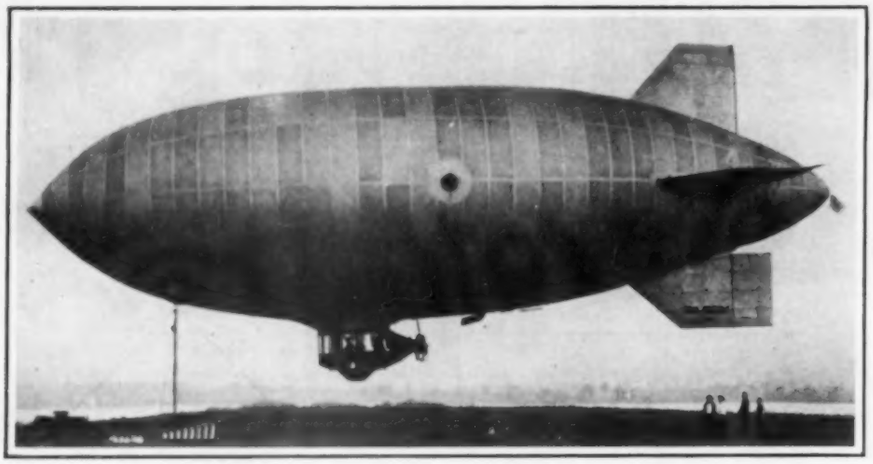
ROBERTSON HEADS NEW PACIFIC-GOODRICH CO.

S. B. Robertson, for the past eight years director of engineering at the B. F. Goodrich Company, Akron, has been named vice president and general manager of the Pacific-Goodrich Rubber Company, the new California subsidiary of the Akron parent company.

Mr. Robertson came to the Goodrich organization from the Pennsylvania Railroad in 1919. He is a graduate of the Massachusetts Institute of Technology and was born in Milton, Mass.

He plans to leave Akron about January 1 and will take over the entire operation of the new plant, which is expected to go into production early in March. The capacity of the plant at full production will be 5000 casings per day and 7500 tubes.

Smallest Dirigible Now Making Flights Over Akron



The new "pony blimp," Pilgrim, recently constructed by the Goodyear Tire & Rubber Company for experimental purposes, has been making almost daily trips over Akron and the surrounding country. It is said to be the world's smallest airship and is one-fiftieth the size of the U. S. Navy airship Los Angeles. It is only 110 feet long and 30 feet in diameter, but is propelled by a 60 horsepower Wright radial motor, which is a miniature of the famous Wright Whirlwind motor. The cruising speed is 35 miles an hour and its cruising range is 350 miles. It holds 53,000 cubic feet of helium gas and will accommodate only a pilot, motor mechanic and one other passenger. The ship is owned by the Goodyear-Zeppelin Corporation. Recently it flew over Akron carrying Graham McNamee as a passenger, who broadcasted the story of the flight through the local radio station.

NEW RUBBER MERGER FORMED IN SWEDEN

Following the recent dissolution of the Swedish rubber trust as reported in THE RUBBER AGE of September 25, the retail price of galoshes in Sweden has been materially reduced, according to a report from the Department of Commerce. At the same time, a new merger involving the three largest companies under private management is reported and a new price war is expected.

The price reduction comes as a direct result of the recent purchase of Svenska Gummifabriks Aktb. by Kooperativa Forbundet, for 6,000,000 crowns. Kooperativa Forbundet is the wholesale distributor for its 900 retail members in Sweden. However, the retail stores are not owned by Kooperativa Forbundet. The largest of these is Konsumptionsforeningen which has 175 retail stores in Stockholm and the suburbs.

This purchase and the subsequent downward price revision made by the Kooperativa Forbundet has now thrown together the three independent factories at Malmo, Helsingborg and Viskafors. The combined capital of the new independent merger will approximate $5,628,000.

Australian Co. Shows Profit

The Barnet Glass Rubber Co., of Melbourne, Australia, is reported to have made a profit for the fiscal year ended June 30, 1927, of $633,750, against a net profit of $518,412 for 1925-26, and $258,748 for 1924-25, according to advices from U. S. Trade Commissioner Elmer G. Pauly.

Rubber Factory Sold

The plant of the Old Colony Tire Company of Canton, Mass., has been purchased by the Plymouth Rubber Company, Inc., of Canton. The factory building, together with the machinery, equipment and land, figured in the sale. No announcement has been forthcoming as yet from the Plymouth Rubber Company as to their plans in connection with their new acquisition.

McClaren Plant at Capacity

The McClaren Tire & Rubber Company, Charlotte, N. C., are reported to be operating at full capacity on their high-priced line of automobile tires. Mr. H. L. McClaren, president, has expressed himself as very optimistic on the outlook for the year.

AJAX CO. CLOSES DOORS OF TRENTON FACTORY

As a result of the move of the Ajax Rubber Company from Trenton, N. J. to Racine, Wisconsin, the Trenton plant has now been closed and it is not probable that the big factory will reopen. William W. McMahan, vice president and general manager of the company, will leave shortly for Racine and will take with him a number of the old Trenton employees who will retain their regular positions in the Racine plant. It has been announced that the Trenton plant will not be dismantled, however, and will be held intact for the present, at least, in the event it may be needed to handle a sudden increased demand.

DUNLOP COMPANIES IN CLOSER RELATIONSHIP

Dunlop, of England, Purchases Block of Stock in Australian Dunlop Company, Permitting Closer Technical and Commercial Alliance—Dividends Reduced.

A close financial relationship has been effected between the Dunlop Rubber Company of Australia and the Dunlop Rubber Company of Great Britain, according to reports made to the Department of Commerce. The English company, it is understood, have purchased 500,000 shares of the stock of the Australian concern and will have the right to choose three of the directors on the board of the Australian company. The directors of the two organizations feel that the combination will strengthen the position of the Australian company, permitting a closer technical and commercial alliance, and making available the benefits of the English company's trade secrets and research laboratory. Chief among these will be the new "Anode" process, by which rubber is deposited upon molds by electrolysis, a method believed to offer possibilities for cost reductions in manufacture. The English company has been working on this process for some time and has acquired extensive rights.

Dividend Rate Reduced

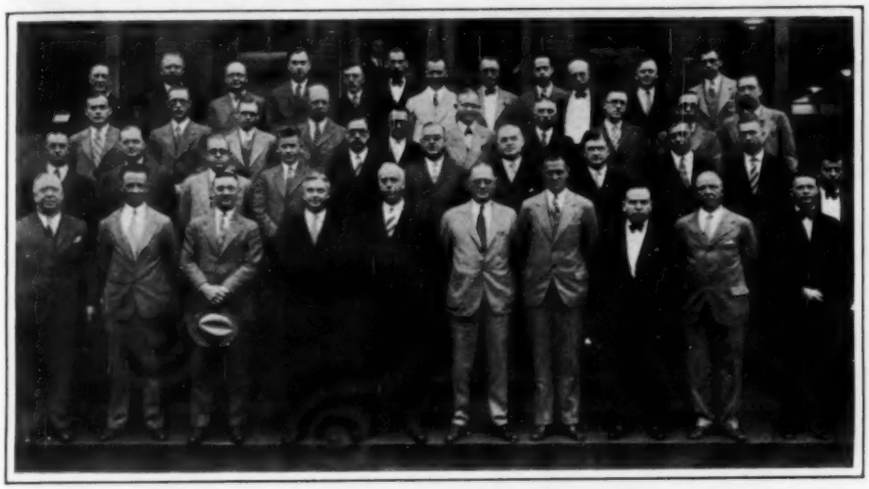
Recent disclosures at the meeting of shareholders of the Australian Dunlop Company in connection with the amalgamation of the English and Australian companies, indicate that the latter company, despite a record business year, may be unable to continue the past dividend rate, for the present at least. W. L. Ballieu, one of the directors, reported that the drop in the price of rubber had had an adverse effect on the profits of the company, which had made heavy future purchases. Returns from the company's branches throughout Australia and New Zealand are not yet available, but intimations are that a cut in dividend may be necessary. Recent dividends have been at the rate of 10 per cent per annum. It now appears that the extension of the company's plant in Melbourne will be even greater than has been generally anticipated. Latest reports are that the present capacity will be doubled, and that the necessary work will be completed about the middle of 1928.

Synthetic Rubber Co. Formed

Notice of the formation of the International Synthetic Rubber Company has been announced with offices in New York City. Little is yet known of the organization other than advices that the factory will be located in Newark, N. J. The officers of the concern will include John J. Owen of Utica, N. Y., who is said to be responsible for the discovery of the process which will be used.

GOODYEAR HEADS HOLD INTER-PLANT CONFERENCE

The seventh annual conference of the heads of the several factories of the Goodyear Tire & Rubber Company was held during the first week in October, at the Akron plant. Sessions of the conference were held in Goodyear Hall. Vice-President C. C. Slusser opened the conference and pointed out that the purpose of the annual meetings was to coordinate the work of the Goodyear plants throughout the country. The conference held sessions during the entire week, at which papers on a variety of plant matters were read and the various methods of plant operation were discussed.



Front row, left to right: W. C. State, consulting engineer; B. Darrow, manager development; E. H. Koken, general superintendent, Canada; C. C. Slusser, vice-president and factory manager; P. W. Litchfield, president; Wm. Stephens, general superintendent, Akron; H. E. Blythe, vice-president and general superintendent, California; T. A. Linnane, general superintendent, England; C. E. Falor, superintendent Marathon; R. J. Brady, general purchasing agent, California.

Second row: E. J. Christy, superintendent Adena coal mines; S. A. Steere, manager fabric development; G. I. Parmenter, superintendent Cedartown Mills; C. C. Grant, manager engineering division; L. S. Hall, superintendent Devon Mills; C. W. Young, superintendent Killingly Mills; G. F. Goudreault, superintendent St. Hyacinthe Mills; L. P. Barrett, foreman Division A, Canada; H. O. Allman, foreman Division B, Canada; C. E. Shumaker, personal manager, Canada; W. L. Hain, manager Inter Plant Relations.

Third row: H. A. Flannery, division superintendent; W. H. Fleming, superintendent Plant 2 production; H. E. Morse, manager mechanical goods development; W. I. Satow, division superintendent; J. P. Heaney, superintendent Goodyear textile mills, Los Angeles; H. E. Campbell, division superintendent; A. M. Hardy, assistant superintendent Bowmanville plant; R. P. Dinsmore, chief chemist; V. N. Braden, division superintendent; D. E. Sheahan, Division A, England.

Fourth row: Hank T. Gillen, superintendent production service; Elmer Clark, master mechanic; H. D. Hoskins, assistant comptroller; R. A. Stannah, manager machine design, Canada; M. A. Neal, manager development, Bowmanville; E. J. Thomas, assistant to president; H. A. Barron, division superintendent, California; I. M. Patterson, chief chemist, England; L. E. Clapp, manager planning division; Ed Kelly, Division B, England; R. T. Brown, manager development division, England.

Dawson With Smith Chemical

J. M. Dawson has resigned from Wishnick-Tumpeer, Inc., New York City, and has accepted a position as chief chemist with the Geo. B. Smith Chemical Works, Inc., Springfield, Ill. Mr. Dawson has had a wide experience in the rubber and allied industries, and in his new position will handle the Smith Company's line of red, green and other organic pigments which are commonly used in the rubber industry. Other specialties which have been developed by Mr. Dawson and used in the rubber trade will be marketed by the Smith organization. In addition to the present chemical laboratory,

Announces Engagement

The engagement is announced of Benjamin Rosenthal, secretary of the Nearpara Rubber Company, Trenton, N. J., and Miss Dora C. Rednor, of the same city.

Ekert Will Visit U. S.

Leon Ekert, of Ekert & Company, importers of Hamburg, Germany and representatives of the United States Rubber Company, is planning on a business visit to the United States during the month of October. While in this country his headquarters will be the general offices of the United States Rubber Company, in New York City.

Barr Builds Addition

Directors of the Barr Rubber Company at Sandusky, Ohio, have approved a new addition to their plant. The new structure will have a frontage of 80 feet and depth of 50 feet, and plans call for its completion by January 1, 1928. The building will be used exclusively for the manufacture of balloons, which are now becoming an important output of the company. Nelt Barr, president, announced that the cost of the new addition will total $30,000, including the installation of the latest modern machinery in balloon manufacture.

U. S. MAKES CHANGES IN TIRE SALES FORCE

Several changes have been reported in the tire sales personnel of the United States Rubber Company. The announcement of the new appointments in a few important posts and the new alignment in the field organization was made recently through G. S. Shugart, second vice-president in charge of tire sales.

Arthur B. Fennell, who has been in the sales organization of the United States Rubber Company since 1910, has been appointed general manager of sales. M. G. O'Hara, who has been in the sales office of the company at Omaha for a long time, will now have supervision of the jobbing lines of tires.

As now aligned, the field organization of the tire division comprises six large sections. These geographical units and their managers are, eastern, E. S. Roe; central, L. M. Simpson; western, P. C. Anderson; southern, T. R. Burton; southwestern, A. H. Lewis, and the Pacific Coast organization.

FIRESTONE PLANT AT LOS ANGELES DELAYED

The opening of bids for the new Firestone Tire & Rubber Company plant at Los Angeles has been delayed for another six weeks, according to Curlett & Beelman, architects for the new structure.

It is reported that all plans have not been completed, but the main structure will be a factory building 360 feet wide and 456 feet long. It will be partly a three-story structure and partly a one-story steel factory unit, and when completed and equipped, will represent an expenditure of $3,000,000.

FAULTLESS CO. MAKES CHANGES IN OFFICERS

Two changes have been made in the Faultless Rubber Company personnel. C. D. Hubler has been elected vice-president and treasurer and George A. Meiler was promoted to the office of secretary of the company. Mr. Hubler, who was formerly secretary, succeeds P. A. Myers, who recently retired from active service in the company.

T. W. Miller was re-elected chairman of the board of directors. J. C. Lawrence was again chosen president and E. F. Miller was renamed factory manager.

Resumes Full Time Schedule

The Firestone-Apsley Rubber Company at Hudson, Mass., is reported to have resumed full time operations with both day and night shifts. At the present this will mean the employment of in the neighborhood of sixteen hundred workers. The plant reports a very satisfactory demand which is responsible for the change from the recent short time schedule.

AUGUST TIRE AND TUBE PRODUCTION ADVANCES

August Figures Show Gain in Production and Shipments, But a Decline in Inventories—Rubber Association Totals Brought up to 100 Per Cent.

The complete August statistics on the production, shipments and inventories of tires and inner tubes, recently released by the Rubber Association of America, show a slight increase in production and total shipments of both pneumatic casings and tubes over the July figures, but a small decrease in inventories. The figures of the Rubber Association in this regard are estimated to represent 75 per cent of the industry. Thus using the Association figures as a base and bringing them up to represent 100 per cent, the total production of pneumatic casings of all kinds during August amounted to approximately 5,752,000, as against 5,087,000 in July.

Total shipments of casings figured at 6,393,000 in August, as against 5,973,000 in July. Inventories, however, stood at 10,721,000 casings for August, as compared with 11,326,000 for July.

In the production and shipments of inner tubes, the August totals held the same relation to the July figures as in the production and shipments of casings. A total of 6,480,000 inner tubes were made during August, as compared with 5,284,000 in July. Shipments during the month amounted to 7,983,000 tubes, as against 7,070,000 in July. Inventories showed a sharp drop from 16,004,000 tubes in July to 14,664,000 in August.

A comparative table of these figures, together with the totals for previous months, is found on page 101.

L. S. Bache

The crude rubber trading fraternity lost a prominent member in the sudden death on October 10, of Leopold S. Bache, one of the partners of the banking and brokerage firm of J. S. Bache & Co., 42 Broadway, New York City. Mr. Bache had been an active trader in rubber for several years and was one of the staunch supporters of the Rubber Exchange of New York, in its inception and early days. For the past year he has also held the office of president of the Rubber Exchange Clearing House, Inc. Recently he was particularly active in advocating the central warehousing plan for the Rubber Exchange. Mr. Bache, who was 61 years of age, was stricken suddenly with heart disease in the New York subway and died before medical aid could be summoned.

Trading on the floor of the Rubber Exchange was suspended for five minutes on Tuesday, October 11, at midday as a mark of respect to Mr. Bache and a committee of the Exchange was appointed to attend his funeral.

AETNA RUBBER COMPANY TO BUILD NEW ADDITION

The Aetna Rubber Company, of Cleveland, Ohio, has announced that it will enlarge its plant at Ashtabula, Ohio, by the addition of another building 90 by 190 feet. The new building will be used for the manufacture of rubber gloves and other dipped goods.

While this is not a new line for the Aetna Company, this class of rubber goods has heretofore been manufactured in the Cleveland plant of the company. The principal product of the Ashtabula plant up to the present time has been battery boxes.

The company plans to start work on the new additions immediately.

NEW MERGER FORMED BY BRITISH CHEMICAL FIRMS

A merger has been effected by the two well-known London rubber chemical concerns in London, the Binney & Smith Company and Morris Ashby, Ltd. The new firm will be known as Binney & Smith & Ashby, Ltd.

The former company has handled for many years the carbon blacks manufactured by the American parent concern of the same name, while the Ashby company has chiefly handled zinc oxide and other compounding materials. The new company will therefore be in a more advantageous position to supply the British rubber manufacturers.

Under the new arrangement the concern will handle also the line of accelerators and softeners of the Rubber Service Laboratories Company of Akron, and will be the sole agents for the "Vulcaid" brand of litharge, produced by the Eagle Picher Lead Company of Chicago.

Alan Speedy will have complete charge of sales and technical services. Mr. Speedy has long been connected with the rubber industry and is prominent in the affairs of the Institution of the Rubber Industry.

TRENTON RUBBER FIRMS INCREASE PRODUCTION

Production at the Trenton rubber plants has increased to some extent. Orders are plentiful for tires and tubes, while the production of heels and soles remains good. Some plants manufacturing mechanical rubber goods report business dropping off a little. The Essex Rubber Company says business has been very good for several months. The Combination Rubber Company is working overtime on tires and tubes. The Luzerne Rubber Company, manufacturers of hard rubber goods exclusively, reports business is increasing.

Mansfield Rubber Expands

A four-story addition, 180 by 80 feet, will be built by the Mansfield Tire & Rubber Company, Mansfield, Ohio, to take care of the increased volume of business which has been developed. The entire addition will be built on top of the present factory and work is expected to start at once. A unique feature of the proposition is that the company plans to do all the work through its own employees. The addition will be of brick and steel and is to cost approximately $75,000.

New Cushion Tire

A new demountable cushion tire has been introduced by the United States Rubber Company. This tire has a series of holes sunk into its sides which allow a high degree of cushioning. The tread is the same as that of the well-known U. S. Royal Cord pneumatic tire. The demountable cushion comes in sizes 29x4.40, 30x3½, 30x5 and 33x5.

Veteran Car Wins Race on Rope Tires

Equipped with rope tires which were held together with tire boots and tape, this 1897 model Autocar won a third of the prize money in a race of veteran automobiles held recently at the Atlantic City speedway. The race was not for speed, but for a successful circling of the mile and a half track. Fifteen cars entered the race, but five of them were unable to get started.

September Rubber Consumption is 3,000 Tons Below Estimates

Slowing Up in Tire Production Cuts Use of Rubber to Lower Figure Than Was Expected—Only 27,214 Tons Used in United States in Month—Stocks Climb Here and in London.

The Rubber Association figures on the consumption of crude rubber in the United States during September, showing the low figure of 27,214 tons, came as a distinct surprise both to the rubber trade and the manufacturing industry. While a decline was expected as reflecting the curtailment in rubber goods manufacture which has been apparent for the last few months, so sharp a drop from the August figure of 33,460 tons, was not anticipated. The September figure was the lowest monthly consumption since December, 1926, and only once previously during 1927 has the consumption fallen below 30,000 tons. The figure of 27,214 represents 100 per cent of the American rubber industry, the Association's figure having been raised from 90 per cent.

Imports Exceed Consumption

In the face of this lower consumption, the arrivals of crude rubber during September, as reported by the Rubber Association of America, totaled 32,798 tons, or slightly less than the imports during August. The preliminary import figure of the Department of Commerce, based on 96 per cent of the total imports, is 31,569, and with deductions to be made for re-exportations both of these figures will probably show a slight decrease. However, the fact is significant that the arrivals of crude rubber into the United States during the last month exceeded by about 5,000 tons the amount consumed in the manufacturing industry.

The statistical position of crude rubber is made all the more unsettled by the figures of stocks on hand and afloat to the United States, and the high record figure of stocks on hand in London. The stocks on hand in the United States advanced to a total of 97,829 tons on September 30, which represents a gain over August of 1,681 tons. Stocks afloat to the United States, totaling 37,966 tons, showed a slight decline, however, in spite of the fact that the government figures on weekly invoiced shipments from Far Eastern ports and London and Liverpool, continued to show a steady increase for the last six weeks.

A considerable excess of crude rubber imports over the amount consumed is also apparent in the statistics for the first nine months of 1927. During that period consumption of crude rubber in the United States totaled 291,952 tons, an increase of 10,254 tons, or 3.6 per cent over the corresponding period of 1926. Imports during the same period have run to 331,383 tons, an increase of 21,545 tons, or 6.9 per cent over the nine months of 1926.

The classification of the various grades of crude rubber imported during September, 1927, and for the nine months of the year, as published by the Rubber Association, are as follows, all figures being in long tons:

	Sept. 1927	Total Imports in 9 months ended Sept. 30 1927
Plantations	31,064	311,427
Paras	1,117	12,947
Africans	43	1,477
Centrals	210	2,736
Guayule	364	2,766
Manicoba and Matto Grosso	.....	30
Total	32,798	331,383

At the same time that crude rubber stocks are at their peak in the United States, the stocks in London are showing a corresponding advance, culminating during the week ended October 15 with 70,916 tons on hand, a new high record for the year and one that has not been surpassed since February, 1923.

These large increases in stocks, coupled with the decrease in domestic consumption, are making the market position of crude rubber extremely unsettled from a trading standpoint. Added to the uncertainty of the market, is the failure of the British Colonial Office to make any advance statement as to the operation of the restriction scheme during the next restriction year which begins on November 1. Some changes in the plan, either in the form of a modification or stricter assessment of exportable allowances, had been expected and the Secretary for the Colonies had promised to issue a statement of any changes in sufficient advance as not to disturb the market, but up to October 19 no announcement has been forthcoming.

E. E. Pardee

Pardee Returning to India

E. E. Pardee, representative of the Firestone Tire & Rubber Company in India, expects to return to his post within the next few weeks. During his brief return visit to the United States, he has spent a great deal of his time at the Akron plant of his company. Mr. Pardee's territory covers all of India, Burma and Ceylon.

NEW RUBBER COMPANY FORMED AT TOLEDO

The incorporation of a new rubber company in Toledo, Ohio, to be known as the Swan River Tire & Rubber Company has been announced with a capitalization of $50,000 in preferred stock and 1,000 shares of no par value common stock. The incorporators are a group of Akron rubber men and plans are being made for the erection of a factory at Toledo to manufacture rubber tires for children's vehicles and similar products. O. B. Keplinger will be president of the new company with McKinley Howard as vice-president and general manager and R. W. Priebe as secretary and treasurer.

Cable Makers Combine

Five important electrical wire and cable companies, including manufacturers of rubber insulated cables, announced plans on October 19 for amalgamation into a single company to be known as the General Cable Corporation which will have net assets of $50,000,000. The new company would own the assets and businesses now operated by the Dudlo Mfg. Co., the Rome Wire Co., the Safety Underground Cable Co., and the Standard Underground Cable Co., as well as the wire mills of a Baltimore concern. The net quick assets of the companies amount to more than $22,000,000. Dillon, Read & Co. is handling the financing.

Robert J. Stokes, president of the Thermoid Rubber Company, Trenton, N. J., has returned from a lengthy trip through South America with his family.

CATALPO!

SEGER PREDICTS BIG YIELD ON U. S. ESTATES

Bud Grafting and Other Scientific Measures Have Raised Yield on the American Estates Far Above Average for All Rubber Lands.

The satisfactory progress of bud grafting and other scientific practices on the rubber estates of the United States Rubber Company now enables the company to predict confidently that certain of the areas will ultimately yield 1,000 pound per acre, C. B. Seger, president of the company announced in a statement made public on October 18. Such a yield would compare with a present average of about 350 pounds per acre for all the planted areas of the world. Plantations of the United States Rubber Company yielded 441 pounds per acre in 1926.

"The large yield on our plantations is due to the application of fertilizers, seed selection and other scientific methods we have followed since we started operations in the Far East in 1910," Mr. Seger said. "It is to these that we look to increase the yield of our acreage to the 1,000 pound mark.

"It may come as a surprise to those who have but lately heard of bud grafting as a means of increasing the productivity of the rubber tree, and who thought the method startlingly new, to learn that of the 83,000 acres planted by the United States Rubber plantations more than 30,000 acres are planted with either budded stock or highly selected seed. This area is greater than all the rest of the world together has planted in budded stock, and when it comes into full bearing will greatly increase the already large yield per acre that the company is obtaining from its 52,000 acres of earlier plantings, now in tapping.

"The real problem in budding is to find a strain that will not only run true to yield through succeeding generations of trees, but in other desirable characteristics as well. It takes several generations of trees to be sure that a strain has all the desirable characteristics, including high yield.

"We now have, as a result of ten years' work on budding experiments, segregated twenty-seven strains which we have approved and which we are using exclusively in all of our new plantings.

"The production of Hevea rubber in all British India, including Burma, in 1926 was 22,813,285 pounds. The United States Rubber Plantations, Inc., produced 22,908,360 pounds in that year, or approximately the same amount.

"On December 31, 1926, India had 135,509 acres of Hevea rubber planted. The United States Rubber Plantations, Inc., had 82,583 acres. India had in bearing during that period 99,763 acres; the United States Rubber Plantations, Inc., 51,968 acres. India's production averaged 229 pounds an acre; that of the United States Rubber Plantations, Inc., 441 pounds. India's plantations employed 44,383 people; the United States Rubber Plantations, Inc., employed 22,392."

Acme Official on Vacation

Edward T. Comly, secretary of the Acme Rubber Manufacturing Company, Trenton, accompanied by his family, has returned from a long motor trip through the south.

Consulting Rubber Technologist

PRACTICAL

Twenty years' experience with the largest and most successful companies in the country

Physical and Chemical Testing

Special facilities for abrasion and quick age tests

Expert Advice to Correct Factory Trouble

New Processes and Formulas Developed

R. R. Olin Laboratories

P. O. Box 72, AKRON, OHIO
Telephones: Barberton 828, Portage 2516-R

CATALPO!

fine Rubber Pigments

MANUFACTURED BY HUBER

aerfloted ARROW BLACK

THE STANDARD CARBON BLACK OF THE RUBBER INDUSTRY—

PRODUCED AT SWARTZ, LA., BRECKENRIDGE, TEXAS & LANCE CREEK, WYO.

aerfloted SUPREX CLAY

HIGH RE-ENFORCING POWER AT ORDINARY FILLER COST—

PRODUCED AT WARRENVILLE, S. C.

aerfloted C.P. DRY COLORS

SOFT, BRILLIANT COLORS FOR RUBBER PRODUCTS—

PRODUCED AT BROOKLYN, NEW YORK

J. M. HUBER, INC.

CARBON BLACKS — CLAYS — DRY COLORS

130 West 42nd St., New York City

Branches in Principal Cities

Fairfield Plant Enlarged

The Fairfield Rubber Works of the Du Pont Company, at Fairfield, Conn., will undergo another enlargement, according to a recent announcement. This will be the fourth addition built to the plant within the last 18 months. The plant manufactures all the rubber coated fabrics marketed by the DuPont Company.

Goodrich Appointments

The B. F. Goodrich Company has recently announced two important changes within their organization. T. B. Tompkins has been promoted to the position of controller of the company and J. W. Jordan has been appointed vice-president and general manager of the Canadian Goodrich Company, Ltd. Mr. Jordan will be located at the Canadian plant and will take over his new duties at once.

Purchases M. Norton & Co.

James E. Norton has purchased the name and good-will of M. Norton & Co., well-known dealers in used rubber machinery at Medford, Mass. The business had been conducted by the purchaser's uncle, also named James E. Norton, until his death recently. The purchaser had been associated with his uncle in the business for nearly ten years.

RUBBER SECTION OF SAFETY COUNCIL MEETS

The Rubber Section of the National Safety Council held its scheduled meetings on September 27 and 28 at Chicago, Ill., at which a number of excellent papers were read and discussed on safety problems connected with the rubber industry, and new officers for the ensuing year were elected.

Paul Van Cleef, vice-president of Van Cleef Bros., of Chicago, in one of the leading addresses, spoke on "The Important Place Safety Holds in the Rubber Industry," and outlined the important factors relative to safety and safety methods in rubber manufacturing plants.

Through the courtesy of the United States Rubber Company, motion pictures of their rubber estates in the Far East were exhibited, showing in particular the sanitation and health work of the company on the plantations.

The report of the engineering committee, headed by J. E. Congdon, of the United States Rubber Company, showed the extent of their work over the past year, the outstanding feature of which was the compilation and publication of the "Safety Code for Rubber Mills and Calenders," which was printed and distributed by the Bureau of Labor Statistics. Other speakers were L. J. D. Healy of Fisk, Dr. J. Newton Shirley of Hood, H. W. Low of Miller, and E. R. Lawler of the U. S. Rubber Co.

In the election of officers, R. C. Salisbury, of the Fisk Rubber Company was elected chairman of the executive committee of the Rubber Section. M. A. Quirk, former chairman, becomes a vice-president of the National Safety Council together with E. A. Hoener, of the Firestone Tire & Rubber Company and Paul Van Cleef.

The Philadelphia Rubber Works Company

Manufacturer of

RECLAIMED RUBBER

of

STANDARDIZED QUALITY

NEW YORK
52 Vanderbilt Ave.

AKRON, OHIO

OAKS, PA.
(Montgomery County)

All Seasons, *Every* Year Cabot's Blacks are *Uniform.* Such uniformity is the result of over forty years of continuous study and development of both processes and personnel.

CARBON BLACK
GODFREY L. CABOT, INC.
940 Old South Building, Boston.

CATALPO!

Machinery and Equipment of

United & Globe Rubber Corp.

Trenton, New Jersey

We wish to advise that we have just purchased all the machinery and equipment of the U & G Rubber Corporation of Trenton, New Jersey, where we have a complete line of up-to-date machinery for the manufacturing of Mechanical Rubber Goods. Same includes—

60" Farrel and Adamson Mill units;
42", 50" and 60" Farrel and Birmingham Mills;
48", 54" and 66" Farrel and Birmingham Calenders;
No. ½, No. 1, No. 3, No. 4 Royle Perfected Tubing Machines;
Model 20, No. 10 62-inch Cameron Slitters;
25'x84" Farrel double ram Hydraulic Belt Press;
10', 12', 16' and 20' Farrel Hydraulic Belt Presses;
DeLaski, Royle and Cahahan Circular Hose Knitting machines;
Horizontal Vulcanizers—Accumulators—Pumps;
Black Rock Automatic Washer Cutter;
15" to 44" square Farrel and Thropp Hydraulic Presses;
Cement Churns—Belt Making Machines;
Complete Laboratory Equipment, including Testers, Mills, Ovens, Scales, etc.;
Complete Mold Equipment.

We also carry a complete line of rubber working machinery at our Warehouses in Trenton, New Jersey, and Akron, Ohio, all of which is in guaranteed working condition, ready for prompt shipment.

L. ALBERT & SONS, INC.

Offices: Trenton, N. J.; Akron, Ohio; Boston, Mass.
Warehouses: Trenton, N. J., and Akron, Ohio.

When Considering *Retort Pine Tar*
Please Bear in Mind That

Pigmentar

(All Specifics controlled)

Is synonymous with Quality, Uniformity and Dependability.

It is in every sense of the word a true softener and when used in proportions of approximately 2% it gives a soft cured product that on ageing is unexcelled.

Let us furnish you with samples and full information

E. W. COLLEDGE, INC.

GENERAL SALES AGENT
P. O. Box 356 Jacksonville, Fla.

REPRESENTATIVES
NEW YORK CITY—J. C. Mathews, 300 Madison Ave.
CLEVELAND, O.—Tyler-Patterson Co., Cuyahoga Bldg.
CHICAGO, ILL.—S. S. Skelton, 1605 Kimball Bldg.
BOSTON, MASS.—Hird & Conner, Inc., 88 Broad St.
TRENTON, N. J.—American Oil & Supply Co.
SAN FRANCISCO, CAL.—Martin, Hoyt and Milne, Merchants Exchange Bldg.
MONTREAL, QUE.—Anthes & Son, 591 St. Catherine St., West

SINCE 1880

Rand

GUARANTEED
RUBBER GOODS
"They Last Longer"
Reg. U. S. Patent Office

RANDPRINT APRONS

Dress Shields	Guimps and Brassieres
Rubber Sheetings	Rubber Aprons
Bunny Baby Pants	Pure Rubber Sheets
Sanitary Aprons	Rubber Bibs
Sanitary Elastic Belts	Crib Sheets
Sanitary Bloomers	Bathing Caps
Sanitary Stepins	Rubber Specialties
Powder Puff Pockets	Rubberized Sheeting
Rubber Gloves	Hot Water Bottles

RANDPRINT RUBBER
SHEET GUM cut to pattern for manufacturers
Special Goods To Order
Made by

RAND RUBBER CO., INC.

Formerly Brooklyn Shield & Rubber Co.
Sumner Ave. & Halsey St., Brooklyn, N. Y., U. S. A.

COOPER GUARANTEED PRODUCT

QUALITY CHEMICALS
for the
RUBBER INDUSTRY

Stocked at Akron, Ohio.

Alcohol
Aniline Oil
Benzol
Co-Flux
Corn Oil
Cresylic Acid
Mica

R. A. SPERRY
Akron Manager
134 E. Miller Ave.
Phone
Main 1898

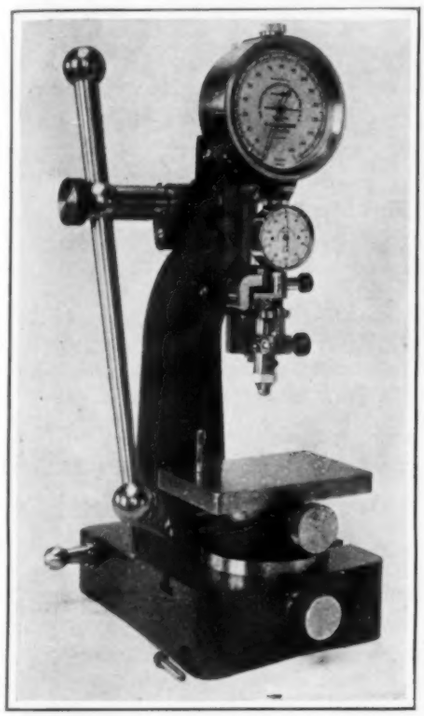
C. S. Naphtha
S. Naphtha
Naphthalene
Palm Oils
Pine Tars
Soap Bark
T. P. G
Toluol

WILLIAM COOPER & NEPHEWS
INCORPORATED
152 W. HURON ST. CHICAGO, ILL.

New Equipment for Rubber Factories

"Monotron" Constant-Diameter Hardness Indicator

A NEW device called the Monotron has recently been announced for the measurement of quantitative hardness in metals, glass, rubber and other materials, a measurement which has not been possible heretofore with any one form of equipment available. The Monotron is manufactured



Monotron Hardness Indicator

by the Shore Instrument & Manufacturing Company, Jamaica, N. Y.

The instrument is a static mechanical pressure machine acting on a small diamond ball impressor through a high duty weigher or pressure scale. The resulting depth of impression under load is measured by a standard micrometer gauge reading to a 1/5000 in. The graduated pressure scale has a capacity of 160 kg., and also reads up to 352 lbs. The successful operation of the unit has been made practical by the introduction of a compensator device on the indicator that serves to correct the hitherto unavoidable errors due to contraction of the parts in the machine and the diamond itself when under strain.

The diamond ball point is 5/8 mm. in diameter and it is made to penetrate the material to a depth of 9/5000 in., thus producing an impression diameter of 0.36 mm. The comparative hardness of the material is measured in terms of the pressure necessary to produce this constant impression. When used to test rubber or a fiber, a comparison can be made against a metal such as copper, which in turn can be standardized against hard steel.

In the accompanying illustration, Model A is shown complete with a removable tilting table. The tilting table, however, can be removed for the testing of large-size pieces.

In operation the specimen is put on the table of the machine with the top surface approximately level, and the rim is advanced downward until the hexagon cap contacts with the piece. The hand lever on the side is then removed until the lower or micrometer gauge hand is moved to a responsive resting position, at which point the micrometer needle is adjusted to 0 through the medium of a thumb screw. The hand lever is again moved until the idler pressure bar reaches the weigher mechanism. At this point the indicator hand on the large dial begins to move away from 0 and at the same time the hand on the micrometer gauge also moves until the required definite penetration is reached. The pressure reading is then taken from the larger dial in kilograms or pounds.

OLSEN HARDNESS TESTER FOR RUBBER BELTING

A HARDNESS tester for rubber belting and similiar materials has been announced by the Tinius Olsen Testing Machine Co., Philadelphia. This company also makes several other testing machines of interest to rubber manufacturers. In the new hardness tester a dead weight is applied by operating a hand lever which permits the load to be applied to the material being tested, acting through a dash-pot to avoid all impact. The application of the load is uniform at all times. The load is applied through a known plunger and the penetration is automatically indicated on the dial.

Olsen Hardness Tester

NEW LIGHT WEIGHT CORE SECTIONS FINDING FAVOR

THE light weight alloy core sections recently announced by the Bridgwater Machine Company, Cherry Street, Akron, Ohio, are finding favor with tire maufacturers for use on both large and small size tires according to reports from several plants where they have been tried out.

Bridgwater Core Section

This new core is made of a light alloy with a base of steel as shown by the shaded portion of the accompanying illustration. The use of steel prevents cutting at the trim line and also eliminates breakage and wear. In weight this new core is 50% lighter than cast iron or steel and is said to be more substantial than wood, aluminum or iron. It is adaptable to any automatic chuck as well as the two ring, washer or other collapsible type. It is being manufactured in all sizes for both high pressure and balloon tires.

Ford Motor Co. of Canada

The financial statement of the Ford Motor Company of Canada, Ltd., for the year ended December, 1926, records a net profit of $5,341,177 after depreciation, federal tax, plant write-off, etc. This is the equivalent to $76.30 a share earned on 70,000 shares of stock outstanding. The output, including sales to affiliated companies, was 100,614 cars and trucks, and 6,140 tractors.

FILMS TIRE TRAVELING AT HIGH RATE OF SPEED

A camera making pictures at the rate of 3,200 exposures per second was used for the first time in the rubber industry recently when C. Francis Jenkins, of Washington, D. C., inventor of the super-speed camera, visited the Akron laboratories of the Firestone Tire & Rubber Company to record in film the action of a tire traveling at high speeds.

Tire experts have sought for a long time to determine exactly what happens to a tire traveling at high speed under varying conditions, but have been handicapped in securing accurate data because of the speeds involved. The tests with the new camera were accordingly of much interest.

The super-speed camera invented by Mr. Jenkins is said to be totally different in principle from any of the motion picture cameras in use today. Where the conventional type of motion picture is made at the rate of 16 exposures per second, the Jenkins camera exposes film at a speed 200 times as fast, the film traveling through at a rate of 200 feet per second. Where the ordinary movie camera makes use of but a single lens, and makes exposures upon an intermittently moving film, the Jenkins camera uses 48 matched lenses and the film moves continuously. The lenses in the new camera are set in a disc which is rotated by an electric motor. The motor also operates the mechanism driving the film past a fixed shutter opening.

BRITISH CABLE MAKERS AGREE ON COOPERATION

For some time past the leading cable manufacturers of the United Kingdom have been negotiating with each other in an endeavor to find a way of cooperation which would be advantageous to all interested in the cable industry. There is in the first place the question of research. Sir George Sutton, M.I.E.E., chairman of W. T. Henley's Telegraph Co., declared recently that in no industry was research more important than in the electrical industry, and the many problems in connection with the distribution of electric energy directly concern the cable manufacturer. Then, in regard to machinery for producing cables, certain of the cable factories design and make a good deal of their own machinery, and it would be of advantage to the industry if its knowledge could be combined, so that only the most efficient type of machine and methods of manufacture should be used.

The protracted negotiations have finally culminated in an agreement between three of the largest manufacturers, namely, British Insulated Cables, Ltd., Callender's Cable & Construction Co., and W. T. Henley's Telegraph Works Co. These firms will welcome and have reason to expect that other cable makers will join in their cooperation. During the negotiations the fact has not been lost sight of that the interest of the consumer and the worker has to be protected as well as that of the manufacturer, that to be successful in business good relations must exist with customers and workpeople.

Rogers Returns to Murray Co.

Richard R. Rogers, Trenton, N. J., has resigned from the rubber division of the Hollingshead Company, Camden, N. J., and has returned to the Murray Rubber Company, Trenton, N. J. He was formerly with the Murray organization and later was head of the Rogers Rubber Company, Trenton.

New Jersey Co. Incorporates

The Chieftain Tire Company has been incorporated in Trenton, N. J., with 100 shares of no par value, to manufacture tires and tubes. The product will be turned out at the plant of the Murray Rubber Company, where the new concern's office will be located. The incorporators are Howard M. Stoner, Howard A. Landerback, Harvey N. Nason and Albert N. Alexander, officials of the Murray Rubber Company.

Zee Zee Receivership Near End

Harry W. Klag, receiver of the old Zee Zee Rubber Company, Yardville, N. J., announces that the affairs of the defunct concern will be wound up soon. He was appointed receiver of the company more than six years ago. Claims against the company are said to aggregate more than $400,000, one being for $100,000 from a tire dealer for failure to deliver tires during the war period. The receiver announces that most of the assets have been used up.

CATALPO!

CLASSIFIED ADVERTISING

10 cents a word, minimum charge $2.00, payable in advance.
Address replies to Box Numbers
THE RUBBER AGE
250 West 57th St., New York City

HELP WANTED

Good opportunity for all-around calender man for the proofing trade. State experience. Address Box 466, THE RUBBER AGE.

EQUIPMENT FOR SALE

3 W. & P. Heavy Duty Mixers, one 50-gallon W. & P. Masticator, 12 Vacuum Shelf Dryers, 1 No. 27 Banbury Mixer.
CONSOLIDATED PRODUCTS CO., Inc.
14 Park Row New York City
Barclay 0603

WE OFFER FOR PROMPT SALE, one (1) 24x66" Stock and Friction Three-Roll Calender, complete with drive, Cutler-Hammer Control, D. C. motor with all refinements, and one (1) 16x30" washer, both used less than six weeks and guaranteed as good as new. The machines are now erected and may be inspected at our shop.
THE ADAMSON MACHINE CO.
Akron Ohio

EQUIPMENT WANTED

2 W. & P. Mixers, 2 Vacuum Shelf Dryers. State condition, price and where can be inspected. Box No. 467, THE RUBBER AGE.

MANUFACTURERS seeking competent help—TECHNICAL MEN seeking good positions—DEALERS having good used machinery—will find the CLASSIFIED SECTION of THE RUBBER AGE of advantage in reaching all their prospects in the rubber industry in the shortest possible time. TRY IT!

CATALPO!

INTERNATIONAL PULP CO., *41 Park Row, New York, N. Y.*
SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER
Covered and Protected by Letters Patent Registered at U. S. Patent Office, Washington, D. C.
LIBERAL WORKING SAMPLE FURNISHED FREE

THE GENTLEMAN FROM MINCING LANE
reports current opinion in London's famous rubber market in every issue of THE RUBBER AGE

The London Letter

The Gentleman Reports a Conversation with a Free Trader.

LONDON, 10th October, 1927.

A FEW weeks ago Clarence Darrow, the famous American criminal lawyer, when speaking in London, said, "You are probably looking at the last of the free traders," (meaning himself). Whatever degree of truth there may have been in what he said as regards the United States, I do not know; but it cannot be said that Mr. Darrow was at that time the only free trader in England. The fact is that this country made its name as a free trading community which brought in raw materials or semi-finished goods, added to their value by further manufacture, and sold them throughout the world's markets. And today most of the citizens of these Isles thoroughly expect to do it again when conditions are a bit more normal.

Another unrepentent free trader, an Englishman, was talking to me in this same vein just yesterday. He was discussing shoes: "Before the war the Americans were selling a lot of shoes here, so many in fact that our manufacturers naturally became interested, went over to look into the 'how and why,' and to see what they had to learn from the Americans. They learned it; and today we are selling British-made footwear in the United States in greater quantities than American competition is coming in here."

Then he went on to rubber: "There may have been some justification for temporary help being given to rubber producers to pull them out of the depression of 1921-22, but no one—except the Dutch—will benefit by continuing this Stevenson Scheme indefinitely.

"My policy is frankly the laisse-faire method—let trade alone. Let trade be free and all mankind will benefit. Rubber growers for their own good need to be exposed to the heat of the day just the same as the rest of us. They need to have their prices cut down by world competition. Even at today's price level the world is consuming more rubber than ever before. What a contrast to the under-consumption of all the old staples, iron, wheat, etc!

AT lower prices, he continued, say 10d or 12d a pound, the uses for rubber would increase greatly, and this reclaimed rubber business would languish. I can't see but that the old supply-and-demand governor can be relied upon now just as much as it ever could to adjust the balance: cheaper rubber, more demand, more rubber sold, costs go down with lowered overheads, and the periods of severe competition force economies in operation, improved methods, invention, etc.

"I'm in the shoe business. Footwear manufacturers were jolly glad to see rubber high priced again. These crepe soles were coming in fast—might have supplanted leather to a degree by now. So shoe makers have been glad to see high priced rubber slow-up the spreading use of rubber soles.

"The size of it is, my son (he was a greybeard, of course), today you lads won't wait for old-fashioned nature to do her work. Just because there is a temporary upset after the war and in some of the old lines there is a greater production—or capacity for production—than the scared old world demands at the moment, your hurry-up business doctors rush around and try and fix it up 'while you wait.' A great combine is put together to fix prices, or tariff walls are pushed up with nice high copings of broken glass and spikes topping them, regardless of whether the great combine will be as efficient as were a lot of the little corporations' which were swallowed by it, or whether the tariff protected country can naturally produce the goods it wants cheaply or not. The trouble is when this temporary stringency has passed you won't be able, easily, to get rid of the huge combine, even when it has proved to be inefficient, or the high tariffs, either. Too many jobholders will see to that.

NOW our rubber friends want to keep their nice comfy rubber air-cushioned seats and sell 8d to 10d rubber forever at 15d to 21d. But for some reason they aren't very happy. The Dutch and the rubber reclaimers are getting more and more of the market. I am sure that the spirit that courageously developed rubber in the East is just as alive among our people today as it was before the war. We can hold our place and grow in importance in rubber just as we have in shoes, asking no favors of governments or anyone else."

As I have written to you in previous letters, these ideas are not considered for one minute by British rubber people today—not for application to rubber growing at any rate—but the free trade attitude is still predominant in the "nation of shopkeepers," as Napoleon called them.

No nation has suffered more from the post-war depression than has Britain and it is not surprising to find more and more of the British willing to get relief from intolerable conditions by special measures such as tariff protection, rubber restrictions, and the like. But it is not at all inconceivable that when the curtain really has risen on the next stage in post-war competition, you will find the British nation still the stronghold of the old idea of buying in the cheapest and selling in the highest markets of the world.

All of which wandering around is of general speculative interest—to me at least—relative to the forces which may or may not develop a conflict here on the subject of the removal of the Stevenson Scheme some time in the future. It seems to me that only when the British electorate comes to a clear cut decision regarding their tariff policy—whether it is to be the old free trade order or a full-fledged tariff schedule—may there be an end to the Stevenson Scheme. Today the tendency is towards more, not less, restriction, but no fundamental change is expected in the mechanism of the Stevenson Scheme at the beginning of the sixth rubber restriction year, November 1st.

All enquiries at the Colonial Office have been answered with the statement that no announcement will be made prior

to October 31st, which simply means that no radical change in the scheme may be expected. New regulations looking to its more effective administration are all that is looked for. The only persons who dare express themselves in favor of the elimination of the scheme usually preface their remarks of this subject with a few words to the effect that before doing away with restriction they would wait until the exportable percentage again rises to 100 per cent!

On account of their vast size, and because of Eric Miller's connection with the firm, Harrison & Crosfield's annual earning record is of considerable interest. In the report for the past year profits have increased again, being £365,000 as compared with £339,000 in the previous year. Such results are rather mystifying, coming as they do on top of the almost unanimous decline in the profits of those of their subsidiary companies which have reported of late. Probably this anomaly will be explained at their coming annual meeting.

Yours faithfully,
THE GENTLEMAN FROM MINCING LANE.

Rubber at London Industrial Show

The Rubber Growers' Association of London has had a large exhibit at the ninth Shipping, Engineering and Machinery Exposition which has been running in London, the purpose being to show shipbuilders, engineers and machinery builders how rubber may be used in their businesses.

The central figure of the stand was a section of a ship which made it easy to demonstrate the many ways in which rubber could be used in ship construction and furnishing. Large scale models and diagrams were also on view to illustrate effectively rubber's part in the construction of steamships, railways cars, airplanes, etc. The exhibit was divided into various sections such as mining, transport, power and general engineering and construction.

The R. G. A. booklet, "Rubber and Engineering," has gone into a second edition of 50,000 copies, the first 50,000 having been used up.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of THE RUBBER AGE published semi-monthly at New Brunswick, N. J., for October 1, 1927.

State of New York } ss.
County of New York }

Before me, a notary public in and for the State and county aforesaid, personally appeared P. L. Palmerton, who having been duly sworn according to law, deposes and says that he is the Editor of THE RUBBER AGE and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Palmerton Publishing Company, Inc., 250 W. 57th St., New York City; Editor, P. L. Palmerton, 250 W. 57th St., New York City; Managing Editor, None; Business Manager, Peter P. Pinto, 250 W. 57th St., New York City.

2. That the owner is, (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorpated concern, its name and address, as well as those of each individual member, must be given).

Palmerton Publishing Company, Inc., 250 W. 57th St., New York City; P. L. Palmerton, 250 W. 57th St., New York City; Aviation Publishing Corp., 250 W. 57th St., New York City.

3. That the known bondholders, mortgages, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are:

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

P. L. Palmerton, Editor

Sworn to and subscribed before me this 26th day of September, 1927
[Seal] HANNAH GOLDENSON, Notary Public.
(My commission expires March 30, 1928.)

BOWSER

Encouraging Men to Use Enough Oil

Put oil where it is CONVENIENT, and workmen use it adequately; make oil even a little bothersome to get at, and machinery suffers.

Enclosed tank for departmental storage of oils

That's why Bowser has such a comprehensive line of equipment for departmental storage — square tanks, round tanks, hinged-top tanks, all with pumps mounted thereon. All sizes, of course—all leakproof, all accurate and all convenient to use.

Small tank for storage of oils—can be used individually or in batteries

Because we specialize on these oil storage problems, for all industry, we can engineer standard equipment to meet your individual needs, AT A CONSIDERABLE MONEY SAVING.

Larger tank—for engine room or central oil house garage

Let a Bowser man tell you how to put oil where it will be used — where it will SAVE machinery, as well as men's time. Address Dept. 76.

S. F. BOWSER & COMPANY, Inc.
LUBRICATION ENGINEERS AND MANUFACTURERS
FORT WAYNE, INDIANA, U.S.A.

LUBRICATORS—OIL FILTERS—OILING SYSTEMS—ACCESSORIES
OIL STORAGE AND DISTRIBUTION SYSTEMS

LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

OCTOBER 22, 1927

COTTON

THE latest government estimates of the 1927 cotton crop have been slightly more encouraging and have caused a more settled tone in the market, resulting also in a price reduction in cotton goods and tire fabrics. Mills are reported to be working satisfactory capacities, and the general situation can be said to have improved.

September consumption by American mills, as reported by the Bureau of Census, amounted to 627,321 bales, compared with 570,572 bales for September, 1926. Stocks in consuming establishments on September 30, 1927, totaled 1,118,776 bales, as against 936,441 on the same date of 1926.

High, low and closing prices on October 18 were as follows:

	High	Low	Oct. 18 Close	Oct. 4 Close
October	20.69	20.52	20.48	20.90
December	20.80	20.55	20.55	21.19
January	20.82	20.58	20.59	21.21
March	21.02	20.75	20.75	21.49

Tire Fabrics

The easier condition in the cotton market has caused a slight reduction throughout the range of tire fabric prices. The drop all along the line has averaged about one cent per pound. Mills report a quiet market, with the tire factories slow in placing forward orders. The present curtailment in the tire industry is not helping the situation, and mills are finding it increasingly difficult to place their December and early 1928 stocks. Late quotations follow:

CORD			
Peeler, carded, 23/5/3	lb.	.46 @	.48
Peeler, carded, 23/4/3	lb.	.47½ @	.49
Peeler, carded, 13/3/3	lb.	.42½ @	.44
Peeler, carded, 15/3/3	lb.	.43 @	.45
Egyptian, carded, 23/5/3	lb.	.54 @	.57
Egyptian, combed, 23/5/3	lb.	.59 @	.62
CHAFERS			
Carded American, 8 oz.	lb.	.41 @	.42
Carded American, 10 oz.	lb.	.46 @	.47
Carded American, 12 oz.	lb.	.41 @	.45
Carded American, 14 oz.	lb.	.42 @	.45
LENO BREAKER			
Carded American, 8¼ oz.	lb.	.43 @	.45½
Carded American, 10¼ oz.	lb.	.43 @	.45
SQUARE WOVEN			
Carded American, 17¼ oz. 23-11 ply	lb.	.46 @	.47
Carded American, 17¼ oz. 10-5 ply	lb.	.41 @	.42

Sheetings

Sheetings have enjoyed an increased demand during the last fortnight in response to slightly lower price levels, but buying has been in small lots. Mills report difficulty in disposing of their accumulating stocks. Late quotations follow:

40-inch 2.50-yard	yd.	.14⅛ @	.14¾
40-inch 2.85-yard	yd.	.12⅞ @	.13
40-inch 3.15-yard	yd.	.13⅛ @	.13⅜
40-inch 3.60-yard	yd.	.11½ @	.11⅝
40-inch 3.75-yard	yd.	.10 @	.10¼
40-inch 4.25-yard	yd.	.09⅛ @	.09¼

Ducks

The reduction in duck prices since last reported has stimulated some activity in this department of the trade and inquiries have been more numerous. Buying, however, continues to be "hand-to-mouth" and mills report inventories to be accumulating in the face of good production but low sales. Latest prices are as follows:

Belting and Hose	lb.	.36 @	.37
Enameling	lb.	.37 @	.41
Shoe Ducks	lb.	.32 @	.38
Single filling	lb.	.16 @	.19
Double filling	lb.	.19½ @	.20

RECLAIMED RUBBER

The demand on reclaimers during the last fortnight has been steadily maintained and both reclaimers and the rubber manufacturing companies which do their own reclaiming are working at fair capacity. Price levels remain unchanged as follows:

High Tensile			
Super-Reclaim No. 1 Black	lb.	.17½ @	.18
Super-Reclaim No. 2 Black	lb.	.13½ @	.14½
High Tensile Red		.14 @	.14½
Shoe			
Unwashed	lb.	.08 @	.08¼
Washed	lb.	.10¼ @	.10¾
Tube			
No. 1 (Floating)	lb.	.17 @	.17½
No. 2 (Compounded)	lb.	.13½ @	.14
Tires			
Black, washed		.10 @	.10¼
Black, unwashed		.08 @	.08½
Black selected tires	lb.	.08¾ @	.09
Dark Gray	lb.	.11 @	.12
Light Gray	lb.	.13 @	.13¼
White	lb.	.15 @	.15½
Truck, Heavy Gravity	lb.	.07½ @	.07¾
Truck, Light Gravity	lb.	.08 @	.08¼
Miscellaneous			
Mechanical Blends	lb.	.07 @	.08
Red	lb.	.14 @	.14½

Scrap Rubber

Scrap rubber supplies have been more plentiful during the last fortnight with a particularly large quantity of mixed tires in the market. A slight reduction in the price of this grade of scrap has resulted. On the other hand the discarding of old tires at the beginning of the winter is the usual seasonal condition. Continued demand on the part of the reclaimers for other scrap grades has kept the market firm without material changes in the price range. Late quotations on the chief grades follow:

(Prices to Consumer)

Auto tire peelings	ton	34.00	@35.00
Standard White auto	ton	57.50	@60.00
Mixed auto	ton	22.50	@24.00
Bicycle tires	ton	24.00	@25.00
Clean solid truck tires	ton	25.00	@26.00
Boots and shoes	lb.	1.70 @	1.75
Arctics, trimmed	lb.	.01⅜ @	.01½
Arctics, untrimmed	lb.	.01 @	.01¼
Inner tubes, No. 1	lb.	.07⅝ @	.07¾
Inner tubes, No. 2, compounded	lb.	.05½ @	.05¼
Inner tubes, Red	lb.	.06¾ @	.07
Air Brake Hose	ton	37.00	@38.00
Rubber Hose	ton	17.00	@18.00

CRUDE RUBBER

THE crude rubber market has remained quiet and fairly firm during the past fortnight, holding around 34 cents on the outside market. Daily fluctuations have not exceeded ½ cent and the volume of business reported has been very small. The undertone of the market is far from settled, however, and the outside market is being buoyed up chiefly by the apparent "pegging" of the market by the Exchange, rather than by its own strength. In the last week the market has experienced the condition of an advance in price levels in the face of an extremely unfavorable statistical position. The prices quoted on October 18 follow:

Plantations—		
Ribbed Smoked Sheets—		
Spot	.34½ @	.34¾
October	.34½ @	.34¾
November/December	.34½ @	.34¾
January/March	.35⅛ @	.35⅜
First Latex, crepe spot	.34¾ @	.35
Amber Crepe, No. 2 spot	.30½ @	.30¾
Amber Crepe, No. 3	.29½ @	.29¾
Amber Crepe, No. 4	.29 @	.29¼
Brown Crepe, Rolled	.26¾ @	.27
Brown Crepe, Clean, thin	.29½ @	.29¾
Brown Crepe, Specky	.28½ @	.28¾
Liquid Latex, per gal.	1.50 @	1.75
Pontianac—		
Bangermassin	Nominal	
Palembang	Nominal	
Prime Pressed	Nominal	
Sarawak	Nominal	
Paras—		
Up-river Fine	.28½ @	.29
Up-river Medium	.24 @	.25½
Up-river Coarse	.21 @	.21½
Acre Bolivian, fine	.28½ @	.29
Tapajos, fine	.39 @	—
Cut Beni Bolivian, fine	.45 @	—
Caucho Ball—		
Upper, shipment	.20 @	.21
Island, fine	.26½ @	.27
Centrals—		
Corinta, scrap	.27 @	—
Esmeralda, sausage	.22 @	.23
Guayule, washed and dried	— @	.28
Africans—		
Benguela, No. 2	Nominal	
Congo, upper, black	Nominal	
Congo, upper, red	Nominal	
Balata—		
Block, Colombia	.35½ @	.38
Block, Cuidad	.34½ @	.35
Gutta Percha—		
Siak	.24 @	—
Red Macassar	3.00 @	—

LONDON MARKET

Standard Ribbed Smoked Sheets—*Buyers*		
Spot	.16¾ @	.16⅞d
October	.16¾ @	.16⅞d
November/December	.16⅞ @	.17d
January/March	.17¼ @	.17⅜d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—*Sellers*		
Spot	.16⅝ @	.16¾d

Recent daily closing prices on the Rubber Exchange of New York are shown on the Financial Page in the News Section of this issue. Daily spot prices of Ribbed Smoked Sheets are given in the Statistical Section.

LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

OCTOBER 22, 1927

IN volume of movement, rubber chemicals and compounding materials have suffered a decline during the past fortnight, due to the seasonal curtailment in production by the rubber manufacturing industry. Demand has kept up in proportion to this yearly curtailment, however, and has not materially affected the general price levels in these raw materials. The only noticeable changes have been a rise in white lead and a slight decrease in Hexa. A new accelerator of the aldehyde series called A-20 has just been announced. Its main difference from the others in the same group is that it may be used in white or delicately tinted stocks. It is quoted below for the first time. Other accelerators remain as previously quoted. Quotations follow:

ACCELERATORS

Organic				
A-7	lb.	.70	@	.80
A-11	lb.	.75	@	.90
A-16	lb.	.65	@	.85
A-19	lb.	.75	@	.90
A-20	lb.	.60	@	.75
Aldehyde ammonia, crystals	lb.	.65	@	.70
Aniline oil, drums	lb.	.17	@	.17½
Crylene	lb.	.70	@	—
paste	lb.	.50	@	—
Di-Ortho-Tolyiguanidine	lb.	.85	@	.90
Diphenyiguanidine	lb.	.68	@	.72
Ethylidene aniline	lb.	.60	@	.65
Excellerex	lb.	.35	@	.40
Formaldehyde Aniline	lb.	.38	@	.42
Grasselerator 102	lb.	.65	@	.70
Grasselerator 552	lb.	4.45	@	4.60
Grasselerator 808	lb.	1.05	@	1.35
Grasselerator 833	lb.	1.50	@	1.75
Heptene	lb.	.55	@	—
Hexamethylene-tetramine	lb.	.62½	@	.67½
Lithex	lb.	.18	@	.20
Methylenedianilide	lb.	.38	@	.40
Monex	lb.	3.25	@	—
Piperidine-Piperidyldithio-Carbamate	lb.	4.45	@	4.60
Quinoidine	lb.	.40	@	—
R & H 40	lb.	.50	@	.55
R & H 50	lb.	.50	@	.55
Safex	lb.	1.20	@	1.25
Tensilac, No. 39	lb.	.55	@	.60
Tensilac, No. 41	lb.	.65	@	.70
Thermlo F	lb.	.50	@	.55
Thiocarbanilide, kegs	lb.	.26	@	.28½
Thionex	lb.	3.25	@	—
Trimene	lb.	.75	@	—
base	lb.	1.20	@	1.35
Triphenylguanidine	lb.	.65	@	.70
Vulcanex	lb.	.82	@	.86
Vulcone	lb.	.70	@	.74
Vulcanol	lb.	1.05	@	1.08
Z 88	lb.	.75	@	1.00
Inorganic				
Lead, sublimed blue	lb.	.08¼	@	.08¾
Lead, white	lb.	.10½	@	.12½
Litharge, domestic	lb.	.08¾	@	—
Magnesia, calcined, light	lb.	.06	@	.12
heavy	lb.	.04	@	.04½

COLORS

Blacks (See Compounding Materials)				
Blues				
Prussian	lb.	.33	@	.35
Ultramarine	lb.	.08	@	.35
Browns				
Sienna, Italian	lb.	.05	@	.12½
Umber, Turkey	lb.	.04½	@	.06
Greens				
Chrome, light	lb.	.27	@	.31
medium	lb.	.29	@	.32
dark	lb.	.31	@	.34
Chromium Oxide, bbl.	lb.	.35	@	.38
Reds				
Antimony crimson, 15/17	lb.	.40	@	—
sulphur free	lb.	.50	@	.52
golden 15/17 F.S.	lb.	.16	@	.25
Indian English (dom.)	lb.	.08	@	.10
Oximony	lb.	.13¼	@	—
Para toner	lb.	.13	@	.14
Red oxide, reduced	lb.	.10	@	.11
pure	lb.	.14	@	.15
Venetian red	lb.	.02	@	.06
Vermillion, quicksilver, English	lb.	1.85	@	1.95
Whites				
Lithophone, Akcolith	lb.	.05 2/5	@	.06
Lithophone, Azolith	lb.	.05¼	@	.05¾
Lithopone, Vanolith	lb.	.05¾	@	—
Titanox	lb.	.10	@	.10½
Cal. Base Pigment	lb.	.10	@	.10½
Zinc Oxide—American Process				
American Azo:				
ZZZ (lead free)	lb.	.06½	@	.07
ZZ (leaded)	lb.	.06⅝	@	.07⅛
Zinc Oxide—French Process				
White seal	lb.	.11⅞	@	—
Green seal	lb.	.10⅞	@	—
Red Seal		.09⅞	@	—
Yellows				
Chrome	lb.	.17	@	.20
Ocher, French medium	lb.	.03½	@	.06
domestic	lb.	.01⅝	@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate	lb.	.13½	@	.14
Are-O-Sol	ton	8.00	@	11.00
Asbestine	ton	14.75	@	18.00
Barium carbonate	lb.	.02¼	@	.04
Barium Dust	lb.	.05	@	.06
Barytes southern off-color,	ton	12.00	@	18.00
Western prime white	ton	23.00	@	—
imported	ton	27.00	@	36.00
Basofor	lb.	.04½	@	—
Blacks				
Arrow "Aerfloted"	lb.	.09	@	.13
Bone Black	lb.	.05½	@	.11
Carbon, compressed	lb.	.07½	@	.11½
Carbon, uncompressed	lb.	.07	@	.11
Drop Black	lb.	.06	@	.10
Lamp Black	lb.	.12	@	.40
Micronex	lb.	.08	@	.12
Velvetex carbon	lb.	.04	@	.07
Blanc fixe dry f.o.b. works	lb.	.04	@	—
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Chalk	ton	12.00	@	14.00
Clay, China, domestic	ton	8.00	@	9.00
Aerfloted Suprex	ton	9.00	@	20.00
Mineral Flour, c. l. fob mine	ton	20.00	@	23.00
Tensulite		15.00	@	—
Glues, extra white	lb.	.20	@	.29
medium white	lb.	.19	@	.25
common bone	lb.	.14	@	.15
Magnesia, carbonate	lb.	.07½	@	.10
Mica, powdered	ton	90.00	@	100.00
Rotten Stone (powdered)	lb.	.02½	@	.04½
Soapstone, powdered	ton	15.00	@	22.00
Starch, powdered	cwt.	3.30	@	3.70
Talc, domestic	ton	16.00	@	18.00
Velvetex	lb.	.04	@	.07
Whiting, commercial	cwt.	.85	@	1.00
English cliffstone	cwt.	1.50	@	—
Superfine	ton	10.00	@	12.00
Vansulite	ton	12.00	@	—
Wood pulp XXX	ton	45.00	@	—
Wood pulp X	ton	25.00	@	—
Zinc Carbonate	lb.	.10	@	.12

MINERAL RUBBER

Genasco (factory)	ton	50.00	@	52.00
Montesuma, solid	ton	28.00	@	36.00
Montesuma, granulated	ton	32.00	@	42.00
Paradura	ton	62.50	@	65.00
Pioneer, MR, solid	ton	41.00	@	43.00
Pioneer—granulated	ton	51.00	@	53.00
Robertson, MR, solid	ton	34.00	@	80.00
M.R. (gran)	ton	34.00	@	80.00

SOFTENERS

Acids				
Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulphuric, 60 degrees	ton	10.50	@	11.50
66 degrees	ton	15.00	@	16.00
Tartaric, crystals	lb.	.31½	@	—
Acids, Fatty				
Stearex	lb.	.10	@	.14
Stearic, single pressed	lb.	.10	@	.11
Double pressed	lb.	.11½	@	.12
triple pressed	lb.	.13½	@	.14
Alkalies				
Caustic soda, 76%	cwt.	3.76	@	3.91
Soda ash, 58% C.L.	cwt.	1.42½	@	1.45
Oils				
Castor, No. 3 bbls.	lb.	.12	@	.13
Corn, crude, bbls.	lb.	.09¾	@	.10
refined	lb.	.11	@	—
Cottonseed, crude		.08	@	—
Cycline	gal.	.27	@	.34
Dispersol A (light)	lb.	.15	@	.16
Dispersol B (dark)	lb.	.14	@	.15
Fluxrite	lb.	.05	@	.06
Glycerine, C.P. drums	lb.	.26	@	.26½
Linseed, Raw C.L. bbl.	lb.	.10½	@	.11½
Palm Lagos	lb.	.07¼	@	.07½
Niger	lb.	.07¾	@	.08
Vansulol	lb.	.10½	@	—
Para-Flux	gal.	.17	@	—
Peanut, domestic, crude	lb.	.11	@	—
Petrolatum, white	lb.	08⅞	@	.09
amber	lb.	.03¾	@	.04
dark amber	lb.	.03¾	@	.03½
Pine, steam distilled	lb.	.67	@	.69
Rapeseed, refined	gal.	.82	@	.83
Rosin, first rectified	gal.	.55	@	—
second rectified	gal.	.58	@	—
Resins and Pitches				
Pitch, Burgundy	lb.	.06½	@	.07½
coal tar	gal.	.05½	@	.06
pine	bbl.	9.00	@	10.00
Rosin, grade K	bbl.	9.35	@	—
Pigmentar	gal.	.33	@	.41
Tar Retort	bbl.	16.50	@	17.00
Solvents				
Acetone, pure	lb.	.14½	@	—
Alcohol denatured, No. 1 bbls.	gal.	.37½	@	.44½
Benzol, 90%	gal.	.28	@	—
pure		.29	@	—
Carbon bisulphide	lb.	.05½	@	.06¼
Carbon tetrachloride		.06¾	@	.07½
Motor gasoline, steel bbls.	gal.	.17	@	—
Naptha, V. M. & P.	gal.	.14	@	—
Turpentine, spirits	gal.	.54	@	.55
wood	gal.	.42	@	—
Waxes				
Beeswax	lb.	.58	@	.60
Carnauba	lb.	.40	@	.50
Ceresin, white	lb.	.13	@	.14
Montan, crude	lb.	.07	@	.07½
Ozokerite, black	lb.	.30	@	—
green	lb.	.26	@	.30
Miscellaneous				
RSL Mold Solution	gal.	.75	@	100

ANTI-OXIDANTS

Antox	lb.	.79	@	.83
Neozone	lb.	.74	@	—
Stabilite	lb.	.65	@	—
VGB	lb.	.55	@	.66

SUBSTITUTES

Black	lb.	.08	@	.14
White	lb.	.10	@	.16
Brown	lb.	.10	@	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03½	@	.06
Sulphur flour,				
Superfine bags	cwt.	2.20	@	2.30
Superfine, bbls.	cwt.	2.55	@	3.10
100% pure, refined, bags	cwt.	2.60	@	3.15
bbls.	cwt.	2.95	@	3.50

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

THE crude rubber import figure for September totaling 31,569 tons was about as expected, but the sharp decline in consumption during the month was a distinct and disheartening surprise to the rubber trading fraternity. The figure for crude rubber consumption for September totaled only 27,214 tons. As a consequence and in the light of the growing excess of imports over consumption during the last few months, the stocks on hand both in America and London, have mounted to record high levels. Stocks in London on October 15 were 70,916 long tons, the highest point reached since February, 1923, while stocks in the United States on September 30, were 97,829 long tons.

Rubber shipments invoiced from Far Eastern ports and Europe continue to show an increase week after week, culminating during the week ended October 8 in 7,119 tons, the highest record since the week of July 16, 1927.

In spite of the unfavorable statistical position of crude rubber from a trading standpoint, the market price has not fluctuated to any extent and aside from daily movements varying from 1/16 to 3/16 of a cent, spot ribbed sheets have remained at the same level during the fortnight, except as seen in the table on the next page.

New statistics covering rubber consumption, exports and imports, have been added to the following tables. There are also added the new monthly totals for rims inspected, gasoline consumption and tire production.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

Table of Contents

United States Rubber Imports and Exports
Rubber Consumption in the United States
Rubber Invoiced to the United States
Daily Rubber Prices in New York
Monthly and Annual Rubber Prices
London Official Rubber Prices
Daily Cotton Prices in New York
Stocks of Crude Rubber in the U. S.
Stocks of Crude Rubber in London
Rubber in Singapore and Penang
United States Tire and Tube Statistics
Automobile Production—U. S. and Canada
Rims Inspected and Passed in the U. S.
United States Consumption of Gasoline
Rubber Exports from Producing Countries
Rubber Imports into Consuming Countries

U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1925:							
Jan.	32,898	22,406,756	30.41	1,162	963,593	37.02	31,736
Feb.	24,696	18,532,115	33.50	979	779,406	35.53	23,717
Mar.	33,072	25,146,691	33.94	1,345	1,105,119	36.69	31,727
Apr.	32,506	24,874,562	34.16	1,130	1,009,305	39.86	31,376
May	36,932	30,311,754	36.64	1,203	1,323,445	49.12	35,729
June	31,569	26,855,883	37.98	1,198	1,577,106	58.75	30,371
July	32,455	33,701,723	46.36	1,278	2,132,681	74.52	31,177
Aug.	33,412	39,834,348	53.22	1,131	1,623,258	64.08	32,281
Sept.	26,367	36,686,013	62.11	1,154	1,820,360	70.41	25,213
Oct	34,651	50,027,338	64.45	1,132	1,989,291	78.43	33,519
Nov.	37,755	56,271,963	66.54	1,605	2,898,930	80.65	36,150
Dec.	40,329	65,055,868	72.02	1,510	2,625,259	77.61	38,819
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,316,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,734	42.22	41,814
Feb.	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887
Mar.	35,514	28,693,026	36.07	2,763	3,249,665	52.50	32,751
Apr.	46,202	37,284,806	36.15	1,575	1,428,425	40.45	44,627
May	36,543	30,998,657	37.87	2,782	2,501,562	41.74	33,761
June	33,045	27,833,770	36.28	1,775	1,550,592	38.99	31,270
July	37,678	31,678,259	37.53	1,958	1,560,858	35.58	35,720
Aug.	32,810	26,396,904	36.59	1,809	1,382,768	34.49	31,001
Sept.*	31,569	23,852,857	33.73				

*Official estimates based on arrivals at New York and Boston.

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1921	1922	1923	1924	1925	1926	1927
January	5,045	16,938	30,106	29,058	29,638	32,196	31,518
February	5,955	14,767	30,149	25,736	29,761	31,136	30,137
March	9,190	21,408	36,629	28,385	33,498	32,936	36,141
April	13,084	19,294	29,085	27,129	34,139	32,696	35,871
May	16,023	23,246	36,155	25,845	35,322	29,364	34,592
June	16,142	31,713	24,272	22,753	35,822	28,598	33,801
July	18,310	24,522	17,685	23,396	36,053	27,577	29,219
August	23,649	29,361	20,359	28,982	35,909	34,533	33,460
September	16,705	24,410	17,594	31,497	31,691	32,904	27,214
October	16,814	26,881	21,321	31,520	29,047	29,836	
November	14,105	24,950	20,437	27,289	28,853	28,080	
December	15,482	25,070	21,902	27,199	28,748	26,293	
Totals	170,504	282,560	305,694	328,769	388,481	366,149	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926	1927
Jan./Mar.			96,776	87,609	95,263	94,301	99,216
Apr./June	65,463	127,360	89,493	75,674	104,099	87,109	103,242
July/Sept.			55,621	83,813	99,493	93,793	89,893
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	
Totals	171,425	282,427	305,507	339,752	384,644	358,415	

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
July 30	4,215	657	1,342	315	6,529
August 6	3,205	650	1,884	320	6,059
August 13	3,955	825	1,646	112	6,538
August 20	3,981	582	1,007	678	6,248
August 27	4,121	760	2,009	167	7,057
September 3	4,443	734	1,058	150	6,385
September 10	3,415	889	1,085	65	5,454
September 17	3,832	576	1,243	162	5,813
September 24	4,497	839	1,391	181	6,908
October 1	3,911	904	1,628	556	6,999
October 8	4,629	754	1,621	115	7,119
October 15	4,573	861	1,170	1,596	8,200

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1925																																
January	—	39⅝	39⅝	—	89	89	39¼	38¾	38⅝	38⅞	11	37⅞	36⅞	36⅜	—	35⅞	35⅞	—	34⅞	34⅞	35	35⅞	36¼	36⅞	—	35⅞	35⅞	35⅞	—	35	35⅞	36⅜
February	—	35⅝	34⅞	—	34½	34½	35⅝	—	35⅜	34⅝	—	—	35⅜	35¾	—	35⅜	36⅞	—	35¾	36¾	36⅞	37⅛	37⅞	38⅛	—	37⅞	37⅞	38⅜	—	—	—	38
March	—	38⅞	38⅞	—	38⅝	39⅜	39⅜	—	39⅜	40⅜	—	—	40⅜	40⅜	—	40⅜	41⅜	—	41⅜	41⅞	42⅜	42⅝	43⅜	43⅜	—	43⅜	43⅜	43⅜	—	—	—	43⅜
April	—	41¼	41⅞	—	41⅜	42⅜	42⅜	—	42⅜	42⅜	—	—	42⅜	42⅜	—	42⅜	43⅜	—	43⅜	43⅜	43⅜	43⅜	43⅜	43⅜	—	44⅜	44⅜	44⅜	—	—	—	44⅜
May	—	45	46⅛	—	46⅛	46⅝	47¼	—	47¼	47¼	—	—	47¼	47¼	—	47¼	47¼	—	47¼	47¼	47¼	47¼	47¼	47¼	—	47¼	47¼	47¼	—	—	—	47¼
June	—	69½	72	—	74⅞	76⅛	76⅛	—	76⅛	76⅛	—	—	76⅛	76⅛	—	76⅛	76⅛	—	76⅛	76⅛	76⅛	76⅛	76⅛	76⅛	—	76⅛	76⅛	76⅛	—	—	—	76⅛
July	—	81⅛	81⅞	—	85⅜	85⅜	85⅜	—	85⅜	85⅜	—	—	85⅜	85⅜	—	85⅜	85⅜	—	85⅜	85⅜	85⅜	85⅜	85⅜	85⅜	—	85⅜	85⅜	85⅜	—	—	—	85⅜
August	—	94½	95⅛	—	95⅛	95⅛	95⅛	—	95⅛	95⅛	—	—	95⅛	95⅛	—	95⅛	95⅛	—	95⅛	95⅛	95⅛	95⅛	95⅛	95⅛	—	95⅛	95⅛	95⅛	—	—	—	95⅛
September	—	85⅛	87⅛	—	88⅜	88⅜	88⅜	—	88⅜	88⅜	—	—	88⅜	88⅜	—	88⅜	88⅜	—	88⅜	88⅜	88⅜	88⅜	88⅜	88⅜	—	88⅜	88⅜	88⅜	—	—	—	88⅜
October	—	91¼	91⅞	—	92	92	92	—	92	92	—	—	92	92	—	92	92	—	92	92	92	92	92	92	—	92	92	92	—	—	—	92
November	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
December	—	106⅝	106½	107¾	107¾	108¼	—	108	109	109¼	106	105½	105½	101	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1926																																
January	—	67	67½	—	66¾	66¾	66¾	—	66¾	66¾	—	—	66¾	66¾	—	66¾	66¾	—	66¾	66¾	66¾	66¾	66¾	66¾	—	66¾	66¾	66¾	—	—	—	66¾
February	—	58	58	—	58	58	58	—	58	58	—	—	58	58	—	58	58	—	58	58	58	58	58	58	—	58	58	58	—	—	—	58
March	—	59	59	—	59	59	59	—	59	59	—	—	59	59	—	59	59	—	59	59	59	59	59	59	—	59	59	59	—	—	—	59
April	—	48½	50	—	50¼	49¾	49¾	—	49¾	49¾	—	—	49¾	49¾	—	49¾	49¾	—	49¾	49¾	49¾	49¾	49¾	49¾	—	49¾	49¾	49¾	—	—	—	49¾
May	—	41½	42	—	42	42	42	—	42	42	—	—	42	42	—	42	42	—	42	42	42	42	42	42	—	42	42	42	—	—	—	42
June	—	42	42	—	42	42	42	—	42	42	—	—	42	42	—	42	42	—	42	42	42	42	42	42	—	42	42	42	—	—	—	42
July	—	38¾	38½	—	38¼	38¼	38¼	—	38¼	38¼	—	—	38¼	38¼	—	38¼	38¼	—	38¼	38¼	38¼	38¼	38¼	38¼	—	38¼	38¼	38¼	—	—	—	38¼
August	—	40¼	40¾	—	43¼	42¾	42¾	—	42¾	42¾	—	—	42¾	42¾	—	42¾	42¾	—	42¾	42¾	42¾	42¾	42¾	42¾	—	42¾	42¾	42¾	—	—	—	42¾
September	—	43	43	—	43¼	41¾	41¾	—	41¾	41¾	—	—	41¾	41¾	—	41¾	41¾	—	41¾	41¾	41¾	41¾	41¾	41¾	—	41¾	41¾	41¾	—	—	—	41¾
October	—	41¼	41	—	41	41½	41½	—	41½	41½	—	—	41½	41½	—	41½	41½	—	41½	41½	41½	41½	41½	41½	—	41½	41½	41½	—	—	—	41½
November	—	36¾	37½	—	37½	37½	37½	—	37½	37½	—	—	37½	37½	—	37½	37½	—	37½	37½	37½	37½	37½	37½	—	37½	37½	37½	—	—	—	37½
December	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1927																																
January	—	—	38½	—	38½	38½	38½	—	38½	38½	—	—	38½	38½	—	38½	38½	—	38½	38½	38½	38½	38½	38½	—	38½	38½	38½	—	—	—	38½
February	—	37⅞	39¼	—	39¼	39¼	39¼	—	39¼	39¼	—	—	39¼	39¼	—	39¼	39¼	—	39¼	39¼	39¼	39¼	39¼	39¼	—	39¼	39¼	39¼	—	—	—	39¼
March	—	39¾	40	—	40	40	40	—	40	40	—	—	40	40	—	40	40	—	40	40	40	40	40	40	—	40	40	40	—	—	—	40
April	—	41¼	41	—	41	41	41	—	41	41	—	—	41	41	—	41	41	—	41	41	41	41	41	41	—	41	41	41	—	—	—	41
May	—	42½	42	—	42	42	42	—	42	42	—	—	42	42	—	42	42	—	42	42	42	42	42	42	—	42	42	42	—	—	—	42
June	—	40¾	40¾	—	40¾	40¾	40¾	—	40¾	40¾	—	—	40¾	40¾	—	40¾	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	—	40¾	40¾	40¾	—	—	—	40¾
July	—	40	40	—	40	40	40	—	40	40	—	—	40	40	—	40	40	—	40	40	40	40	40	40	—	40	40	40	—	—	—	40
August	—	35½	35¾	—	35¾	35¾	35¾	—	35¾	35¾	—	—	35¾	35¾	—	35¾	35¾	—	35¾	35¾	35¾	35¾	35¾	35¾	—	35¾	35¾	35¾	—	—	—	35¾
Sept.	—	34	33¾	—	33¾	33¾	33¾	—	33¾	33¾	—	—	33¾	33¾	—	33¾	33¾	—	33¾	33¾	33¾	33¾	33¾	33¾	—	33¾	33¾	33¾	—	—	—	33¾
Oct.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nov.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dec.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	
May	15.25	27.39	18.89	58.47	47.75	40.76	
June	15.11	26.88	18.81	77.26	42.50	37.25	
July	14.67	26.10	22.16	103.16	41.03	34.44	
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	
Oct.	19.78	26.93	31.13	98.01	42.50		
Nov.	23.88	27.14	34.33	104.80	38.50		
Dec.	27.42	26.60	37.88	98.51	38.25		
Average for Year	17.50	29.45	26.20	72.46	48.50		

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Fifth Restriction Year—Fourth Quarter

Day	Aug.	Sept.	Oct.	Day	Aug.	Sept.	Oct.
1	—	16⅝	16⅛	17	17⅝	16	16½
2	16⅞	16⅝	—	18	17⅜	—	16¾
3	17	16⅝	15¾	19	17⅜	16	
4	17⅛	—	15⅞	20	17⅛	15⅞	
5	17⅛	16⅝	15⅞				
6	17⅛	16⅝	15⅞	21	—	15⅞	
7	—	16⅝	16	22	17⅛	16	
8	17⅛	16½	16	23	17⅛	16	
9	17⅛	16⅜	—	24	17⅛	16⅛	
10	17⅛	16⅜	16	25	—	17	—
11	17½	—	16	26	—	17	16⅛
12	17⅝	16¼	—	27	—	17	16⅛
13	17⅝	16⅜	16	28	—	17	16⅜
14	—	16½	16¼	29	—	16⅞	16¼
15	17⅜	16½	16⅜	30	—	16¾	16⅛
16	17⅜	16¼	—	31	—	16⅞	—

(The average price for the period for which daily prices are reported above is approximately 16.608 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27
November-January	14.285	14.175	17.9983	46.709	19.265
February-April	16.858	12.917	19.356	28.103	19.696
May-July	14.242	10.947	38.469	21.091	18.165
August-October	14.944	14.632	43.269	20.199	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Sept. Cents	Oct. Cents	Day of Month	Sept. Cents	Oct. Cents	Day of Month	Sept. Cents	Oct. Cents
1	23.10	21.80	11	——	20.90	21	21.00	——
2	22.70	——	12	21.95	——	22	20.70	——
3	22.60	21.60	13	22.10	21.25	23	20.90	——
4	——	21.40	14	22.55	21.55	24	20.85	——
5	——	21.00	15	21.40	20.55	25	——	——
6	22.75	21.30	16	21.25	——	26	21.50	——
7	22.70	21.25	17	21.25	21.25	27	21.90	——
8	23.90	20.75	18	——	21.25	28	22.25	——
9	23.60	——	19	20.55	——	29	21.55	——
10	22.80	20.85	20	20.55	——	30	21.80	——
						31	——	——

Average Monthly Price Per Pound

Month	1925 Cents	1926 Cents	1927 Cents	Month	1925 Cents	1926 Cents	1927 Cents
Jan.	23.99	20.85	13.42	Aug.	23.72	18.57	20.04
Feb.	24.70	20.60	14.10	Sept.	23.79	17.02	21.95
Mar.	25.64	19.35	14.32	Oct.	21.77	13.14	
Apr.	24.54	19.13	14.75	Nov.	20.94	12.86	
May	23.41	18.92	16.07	Dec.	20.06	12.68	
June	24.13	18.57	16.85	Average for Year	23.45	17.53	
July	24.68	18.71	18.00				

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	60,870	55,198	76,172	36,759	46,296	45,312	97,629	100,434	121,484
Feb.	54,109	58,035	91,186	41,475	46,935	42,166	95,584	104,970	133,352
March	52,494	61,822	85,740	40,577	43,567	49,600	93,071	105,389	135,340
April	50,143	55,261	92,757	53,465	41,905	38,963	103,608	97,166	131,720
May	52,064	64,360	94,563	46,846	40,303	44,181	98,910	104,663	138,744
June	50,997	60,460	89,250	51,202	40,907	47,233	102,199	101,367	136,483
July	46,245	64,900	98,469	46,003	38,062	40,587	92,248	102,962	139,056
Aug.	42,354	60,870	96,148	41,254	37,360	40,937	83,608	98,230	137,085
Sept.	36,367	62,078	97,829	55,151	42,464	37,966	91,518	105,542	135,793
Oct.	34,085	64,989		51,098	52,930		85,183	117,919	
Nov.	34,885	69,385		42,692	47,311		86,577	116,696	
Dec.	51,215	72,520		48,208	52,020		99,423	124,540	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1920	1921	1922	1923	1924	1925	1926
January	19,300	56,573	67,252	73,498	57,460	27,172	9,994
February	18,329	59,439	67,623	70,483	56,732	23,425	10,005
March	18,969	63,913	66,670	63,438	55,647	18,104	13,750
April	20,072	68,759	68,637	58,770	54,559	12,949	18,951
May	20,921	70,403	70,146	54,439	51,615	5,895	20,896
June	22,517	69,408	71,597	51,050	51,115	5,318	23,894
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727
August	30,674	73,211	72,112	48,427	49,700	4,619	30,764
September	35,504	72,175	70,977	54,523	44,011	5,453	35,077
October	41,743	69,229	68,536	58,891	37,523	5,086	42,141
November	45,550	70,786	68,548	60,074	33,593	3,869	44,057
December	50,652	69,792	72,299	60,246	29,488	5,697	48,921

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1927					
January	48,948	50,756	52,484	53,662	54,786
February	55,740	56,939	56,962	58,659	——
March	59,945	61,516	61,300	63,167	——
April	62,634	63,861	65,033	65,511	67,034
May	68,187	68,041	66,668	67,054	——
June	67,105	67,454	66,894	64,486	——
July	63,917	64,163	63,511	62,819	63,626
August	64,177	64,557	64,842	64,259	——
September	65,162	66,148	66,664	67,253	——
October	68,519	70,167	70,916		

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1925	1926	1927	End of	1925	1926	1927
Jan.	15,925	16,726	25,440	July	15,894	23,101	22,558
Feb.	17,320	13,653	26,766	Aug.	17,251	23,362	25,764
Mar.	17,261	18,389	27,844	Sept.	16,526	25,997	25,178
Apr.	15,368	16,328	24,543	Oct.	15,346	26,614	
May	15,804	16,967	25,133	Nov.	19,788	25,486	
June	15,884	19,416	21,898	Dec.	18,840	26,443	

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1925	26,001,664	66.8
1924	21,863,311	19.7	1926	24,199,524	78.8
1927			1927		
January	1,489,078	77.0	July	1,679,587	84.4
February	1,753,224	84.4	August	1,825,905	80.2
March	2,071,989	85.1	September	1,727,122	77.7
April	2,060,868	88.0	October		
May	2,169,208	86.9	November		
June	1,871,538	77.0	December		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927
January	11,918,000	14,386,000	17,582,000	17 888,000
February	9,626,000	13,210.000	15.814.000	18,240.000
March	10,961,000	14,890.000	19.302 000	22.464.000
April	14,583,000	19,013.000	20,848,000	23,371,000
May	15,889.000	20.459.000	24.213 000	26.579.000
June	16.421.000	20 724 000	23.803 000	27.799.000
July	18,610,000	22,879,000	24.752,000	29,784,000
August	19,525.000	22.323.000	26,912,000	29,779,000
September	16,871,000	20,177,000	22,929,000	
October	18,029.000	19,826.000	23.973.000	
November	16.607.000	18.024.000	20.618.000	
December	15,663.000	17,954.000	21,419.000	
TOTAL	185.003 000	223.865.000	262,165.000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	40,932	45,259	51,633	60,845	61,237
Shipments	39,987	45,204	50,120	59,262	59,002
Inventory[2]	6,132	5,772	7,427	8,142	10,456

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	4,740	4,587	4,965	4,013	2,974	4,932	7,949	9,947	10,432
Feb.	4,908	4,865	5,095	3,924	3,436	4,458	8,928	11,164	11,075
Mar.	5,276	5,456	6,276	4,657	4,561	5,701	9,510	12,004	11,583
Apr.	5,341	5,346	6,299	5,498	4,980	5,701	9,088	12,461	12,122
May	5,467	5,023	6,151	5,954	5,211	5,657	8,611	12,343	12,462
June	5,418	5,422	6,202	6,737	5,724	6,253	7,243	11,968	12,462
July	5,587	4,950	5,087	6,295	6,337	5,973	6,421	10,592	11,326
Aug.	5,607	5,872	5,752	4,760	6,744	6,393	7,261	9,732	10,721
Sept.	5,007	5,706		4,569	6,040		7,681	9,318	
Oct.	4,505	5,103		5,580	4,544		6,670	9,917	
Nov.	4,229	4,324		3,671	3,733		6,955	10,297	
Dec.	4,760	4,683		3,601	4,718		8,142	10,456	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	50,850	60,116	70,706	82,614	76,618
Shipments	49,673	59,072	68,016	81,004	71,591
Inventory[2]	7,643	8,425	11,052	11,313	16,200

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	6,343	6,809	5,337	5,576	3,723	6,016	11,570	14,361	15,585
Feb.	6,339	6,825	5,658	4,971	3,736	5,120	13,023	17,090	16,075
Mar.	7,000	7,030	7,184	5,711	4,987	6,157	14,236	19,131	17,096
Apr.	6,851	6,554	7,373	6,704	5,051	6,359	13,618	20,674	17,801
May	6,846	6,149	6,737	8,040	6,304	6,140	12,501	21,141	18,389
June	6,942	6,171	6,306	9,032	6,898	6,832	10,409	20,243	17,858
July	7,544	5,729	5,284	9,140	8,569	7,070	8,635	17,267	16,004
Aug.	7,618	7,424	6,480	6,923	9,579	7,983	9,271	15,462	14,664
Sept.	7,254	7,590		6,665	7,762		9,950	15,312	
Oct.	6,612	6,208		7,845	5,474		8,726	15,929	
Nov.	6,266	4,852		5,406	4,045		9,491	16,604	
Dec.	6,999	5,277		4,991	5,463		11,313	16,200	

(1) Rubber Association of Amreica figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	Passenger Cars			Trucks		
	Total	United States	Canada	Total	United States	Canada
1920	1,883,158	1,799,522	83,636	322,039	311,531	10,508
1921	1,514,000	1,452,902	61,098	147,550	142,402	5,148
1922	2,397,827	2,302,923	94,904	251,434	244,285	7,149
1923	3,719,164	3,589,936	129,228	378,288	361,078	17,210
1924	3,262,764	3,144,999	117,765	378,106	360,625	17,481
1925	3,817,639	3,678,328	139,311	498,019	475,941	22,078
1926						
January	284,703	272,922	11,781	33,461	29,763	3,698
February	334,524	319,763	14,761	41,685	37,608	4,077
March	399,105	381,116	17,989	49,233	44,848	4,385
April	401,836	383,907	17,929	53,887	50,314	3,573
May	394,569	373,140	21,429	51,343	47,838	3,505
June	358,360	339,542	18,818	47,043	44,110	2,933
July	328,816	315,863	12,953	41,847	39,592	2,255
August	393.040	380,258	12,782	47,907	45,404	2,503
September	363,537	350,913	12,624	51,299	46,428	4,871
October	300,142	289,547	10,595	46,965	42,890	4,075
November	226,278	219,504	6,774	39,410	36,356	3,054
December	143,413	137,361	6,052	30,002	28,302	1,700
TOTAL	3,928,323	3,766,336	161.487	534 082	493 453	40,629
1927						
January	208,718	196,973	11,745	40,874	37,243	3,631
February	275,458	260,632	14,826	41,947	38,118	3,829
March	360,754	341,665	19,089	48,590	45,056	3,534
April	373.961	353,071	20.890	48.216	44,495	3,721
May	374.259	352,268	21.991	47 890	44 173	3.717
June	290,188	273,718	16,470	43,003	40,265	2,738
July	242.144	233.425	8,719	32.249	29 981	2.268
August	281,464	271,325	10,139	34,552	31,715	2,837
September						
October						
November						
December						

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]						
	Gross Exports	Gross Exports Minus Imports	Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley[6]	All Other[5]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926:															
Jan.	30,452	10,237	20,215	4,246	1,273	416	472	289	4,110	6,239	8,165	866	1,284	1,805	49,380
Feb.	30,440	8,306	22,134	5,120	725	488	450	253	4,524	5,717	6,854	554	2,759	1,978	51,556
Mar.	35,012	14,800	20,212	5,177	1,113	792	561	418	4,527	5,566	11,984	573	2,126	1,899	54,948
Apr.	23,727	10,565	13,162	3,766	590	679	374	293	4,226	4,598	6,285	410	2,318	1,529	38,230
May	31,231	10,604	20,627	3,944	691	927	410	279	4,440	5,358	8,737	502	1,353	1,464	48,732
June	30,624	11,764	18,860	4,208	452	779	512	275	4,444	6,125	10,614	549	1,213	1,279	49,310
July	28,824	15,280	13,544	4,422	938	911	498	439	4,618	5,612	13,112	1,521	1,565	1,148	48,328
Aug.	34,625	13,595	21,030	5,666	521	890	476	316	4,132	5,699	10,390	378	1,888	1,097	52,483
Sept.	35,913	13,972	21,941	6,015	651	888	689	457	4,065	6,568	11,391	681	2,156	822	56,324
Oct.	39,367	15,203	24,164	5,672	634	805	473	385	4,058	6,998	11,491	661	1,904	1,023	58,268
Nov.	34,302	12,201	22,101	4,228	1,110	685	547	285	3,988	5,816	9,422	718	1,911	1,259	52,070
Dec.	36,811	14,716	22,095	6,498	1,176	895	617	338	5,054	7,117	12,786	790	3,821	714	61,901
	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,184	6,705	10,541	941	2,885	981	55,654
Feb.	27,528	11,607	15,921	3,571	1,469	552	445	360	4,707	6,526	10,634	675	2,082	1,098	48,040
Mar.	41,346	17,464	23,882	7,142	1,124	997	639	432	5,657	7,003	12,490	733	3,203	1,791	65,093
Apr.	29,041	13,069	15,972	3,349	723	984	500*	526	4,666	5,530	10,035	557	2,374	1,495	*46,711
May	31,393	15,491	15,902	3,124	760	786	500*	348	5,430	5,528	14,099	586	2,431	1,207	*50,701
June	32,607	14,706	17,901	3,348	856	1,100	500*	409	4,818	5,519	9,402	772	1,030		
July	23,947	12,697	11,250	4,018	827	859	500*	333	4,771	6,140	11,663	519	1,713		
Aug.	30,371	17,105	13,266	5,357	688	1,133	500*	546				716	2,004		
Sept.															
Oct.															
Nov.															
Dec.															

(1) Mayalan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. (6) Calculated from official import statistics of prinipal consumnig countries, viz., United States, United Kingdom, France, Germany, Italy, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States*	United Kingdom	France (h)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,344	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,648	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,643
1926:															
January	40,345	6,886	2,832	703	2,188	892	760	332	438	76	163	303	89	134	56,141
February	31,435	3,114	3,063	1,113	1,865	741	1,041	643	512	143	88	397	145	75	44,375
March	40,316	8,907	3,941	1,342	2,079	864	1,037	832	547	129	227	377	109	161	60,868
April	33,416	8,275	4,121	1,781	1,615	1,868	865	402	505	71	93	335	130	193	53,670
May	28,705	6,773	2,519	1,848	1,239	1,010	705	200	468	186	241	225	60	192	44,371
June	23,795	5,894	2,196	1,655	1,188	1,465	1,070	983	636	269	215	303	123	103	39,895
July	34,266	6,768	2,352	2,202	1,552	1,447	800	132	702	295	480	292	121	115	51,524
August	26,081	7,327	2,457	2,110	1,888	1,284	796	655	1,275	303	594	336	90	151	45,347
September	35,675	8,843	1,774	2,029	1,355	1,922	819	472	1,241	283	429	317	91	138	55,388
October	28,110	8,082	3,876	2,423	1,865	2,396	645	585	1,004	301	2	360	100	121	49,370
November	37,673	9 247	2,719	3,007	1,548	3,380	832	568	916	194	-18	358	90	181	60,695
December	35,850	4,749	2,890	2,562	1,847	856	439	725	777	248	156	443	151	306	51,999
1927:															
January	41,815	10,192	3,284	2,481	1,936	1,227	672	803	929	296	181	316	139	100	64,371
February	25,886	7,692	3,263	3,103	2,620	1,902	601	907	460	502	153	336	146	210	47,781
March	32,752	9.049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,026
April	44,627	7,875	2,310	2,395	1,509	2,181	781	1,972	762	448	58	230	177	218	65,541
May	33,761	2 896	2,006	3,380	2.519	1,084	918	887	694	633	-57	335	155	228	49,434
June	31,270	2,282	2,387	3,632	2,086	798		1.506	557	575	-16	243	164	183	
July	35,720	1.116	2,384	2.946	2,104	1,505		415	900		66		177	236	
August	31,001	3,463		3,119				386							
September															
October															
November															
December															

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—United Kingdom exports to Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926 and averaged about 400 tons monthly during the first six months of 1927.

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Rubber — Crude, Scrap, Reclaimed

CRUDE RUBBER
We Solicit Your Inquiries
H. Muehlstein & Co., Inc.
41 East 42nd St. New York City
Offices in Akron, Chicago, Boston

RECLAIMED RUBBER—
Uniformity, reliability, cleanliness.
Pequanoc Rubber Co.
Butler, N. J.

RECLAIMED RUBBER—
A standardized grade for every requirement.
U. S. Rubber Reclaiming Co., Inc.
100 E. 42nd St., New York, N. Y.
"44 Years Serving the Industry Solely as Reclaimers"

CRUDE RUBBER
Importers
Members Rubber Exchange of N. Y., Inc., and Rubber Exchange Clearing House, Inc.
Charles T. Wilson Co., Inc.
82 Beaver St., New York
AKRON OFFICE: 507 Second Natl. Bldg.

RECLAIMED RUBBER—
of Standardized Quality
NO. 188 FOR TUBES
Philadelphia Rubber Works Co.
New York Akron Philadelphia

RECLAIMED RUBBER—
The Xylos Rubber Co.
Akron, Ohio
CAPACITY 250,000 Pounds Daily

GUAYULE—"Duro" Brand washed and dried ready for compounding.
Continental Rubber Co.
1775 Broadway New York

RECLAIMED RUBBER—
For All Purposes
Rubber Regenerating Co.
Naugatuck, Conn.

RUBBER—Crude and scrap, all grades.
H. Muehlstein & Co.
Liggett Bldg. New York
Akron, Chicago, Boston, Hoboken

HARD RUBBER DUST
All Degrees of Fineness to Meet Every Manufacturing Need.
Great Lakes Rubber Products Co.
2570 Broadway Cleveland, Ohio

RECLAIMED RUBBER—
Well Known Standards
Monatiquot Brands
Stedman Products Company
South Braintree, Mass.

RUBBER SCRAP
Always Buying and Selling
Rubber Waste, Cured and Uncured, Hard Rubber, Balata, Gutta Percha.
HERMAN WEBER
Newark & Jackson Sts., Hoboken, N. J.

Miscellaneous — Fabrics, Consultants, etc.

CHEMIST, Consulting—
Testing, formulae, costs, experimental work on all classes of rubber products. Litigation.
Fred'k. J. Maywald, F.C.S.
5 William St. Belleville, N. J.

CONSULTING
Rubber Technologist
R. R. Olin Laboratories
P.O. BOX 72, AKRON, OHIO
Telephones: Barberton 828, Portage 2516R

FABRICS—Tire fabrics—coarse builders, chafers, breakers in all grades.
New England Southern Mills
LAWRENCE & CO.
24 Thomas St., New York
Boston, Philadelphia, Chicago, St. Louis, San Francisco

CONSULTING ENGINEERS
Specializing on Rubber Reclaiming—Organizing — Controlling — Research — Buildings Machinery—Formulas.
Bishop Engineering Corp.
809 United Bldg., Akron, O.

FABRICS—Tire, cords, enameling ducks, drills, sheetings, osnaburgs.
J. H. Lane & Co.
250 West 57th St., New York City

LINERS—PROCESSED
For Various Rubber Stocks
The Cleveland Liner & Mfg. Co.
5508 Maurice Ave. Cleveland, O.

The Most Economical Form of Advertising

The Market Place Section of THE RUBBER AGE contains the *only* alphabetically arranged listings of small "ads" available in the rubber industry. Your advertisement in this section will not only be easy to find, but it will produce excellent results at very moderate costs. Let us send you details.

INDEX TO ADVERTISERS

Adamson Machine Co. 107
Akron Equipment Co. 107
Akron Rubber Mold and Machine Co. 107
Akron Standard Mold Co., The 107
Albert & Son, Inc., L. 92, 108
American Cyanamid Co. 106
Anderson-Prichard Oil Corp. 106
Ault & Wiborg Co. 100, 106

Banner Machine Co. 107
Barrett Co., The 106
Binney & Smith Co. ..... Back Cover, 105, 106
Bishop Engineering Corp. 100, 109
Bolling, Stewart & Co. 108
Bowser & Co., S. F. 96, 107
Bridgewater Machine Co. 82, 107

Cabot, Inc., Godfrey L. 91, 105
Cameron Machine Co. 108
Carrier Engineering Corp. 99, 107
Carter-Bell Manufacturing Co., The 100, 106
Cleveland Liner & Mfg. Co. 109
Colledge, E. W., Inc. 106
Continental Rubber Co. 109
Cooper, Wm. & Nephews 92, 105

De Mattia Brothers, Inc. 84, 107
Dovan Chemical Corp. 100, 105
du Pont du Nemours & Co., E. I. 61, 105

Emerson Apparatus Co. 107
Equipment Co. 108

Fisk Rubber Co. 108
Franz Foundry & Machine Co. 99, 107

General Tire & Rubber Co. 108
Grasselli Chemical Co. 105
Greeff, R. W., & Co. 105
Grubb Rubber Co. 108
Gross, A., & Co. 106

Hall Co., The C. P. 73, 106
Harshaw, Fuller & Goodwin Co. 84, 106
Huber, J. M., Inc. 90, 105

International Pulp Co. 94, 105
India Machine & Rubber Mold Co. 107

Kleinert Rubber Co., I. B. 108
Kuhlke Machine Co. 99, 107

Lowe Co., The Clyde E. 107

Maywald, Fred'k J. 109
McNulty, Joseph A. 106
Moore & Munger 59, 105
Muehlstein & Co., Inc., H. 109

National Aniline & Chemical Co. 105
National Standard Co. 99, 107
Naugatuck Chemical Co. 64, 105
New Jersey Zinc Co. 106
Norton & Co., M. 108

Olin Laboratories, The R. R. 90, 105

P. & B. Rubber Mfg. Co. 108
Pequanoc Rubber Co. 109
Philadelphia Rubber Works Co. 91, 109

Rand Rubber Products Co. 92, 108
Rare Metal Products Co. 105
Roessler & Hasslacher Chemical Co. 58, 105
Royle & Sons, John 82, 108
Rubber Regenerating Co. 109
Rubber Service Laboratories Co., The 63, 105, 106

Scott Co., Henry L. 108
Southwark Mfg. Co. 106
Spadone Machine Co. 99, 107
Stamford Rubber Supply Co. 106
Stauffer Chemical Co. 100, 106
Stedman Products Co. 109
Surplus Trading Co. 108

Textile Finishing Machine Co., The 100, 107

United Clay Mines Corp. 100, 106
United Rubber Machinery Exchange 108
U. S. Rubber Co. 108
U. S. Rubber Reclaiming Co. 60, 109

Vanderbilt, R. T., Co. ..... Front Cover, 105

Weber, Herman 109
Whittaker, Clark & Daniels, Inc. 99, 105
Williams Foundry & Machine Co., The 99, 107
Wilson Co., C. T. 84, 109
Wishnick-Tumpeer, Inc. 105

Xylos Rubber Co. 109

BOOK REVIEWS

FACTS AFFECTING THE IMPORTATION OF RUBBER SUNDRIES AND SPECIALTIES THROUGHOUT THE WORLD. Mimeographed Manual. Prepared by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

This first edition of the Rubber Division Manual on export trade in rubber sundries and specialties contains current statistical data designed to furnish exporters with a convenient reference handbook summarizing briefly the importance of the American trade in these commodities with each foreign market.

While the total foreign trade in these particular rubber lines has not been large, the volume has shown a steady increase and with the new data in hand which is given in the pages of this manual, several new markets and possibilities for developing old ones are presented to the American exporter and manufacturer. In the preparation of the manual, free use has been made of reports submitted by foreign representatives of the State and Commerce Departments stationed abroad. The information is not for general publication, however, and is intended for the strictly confidential use of American firms which are interested in building up their foreign business.

A general summary of the international trade in rubber sundries and specialties is published elsewhere in this issue.

* * *

AUTOMATIC TEMPERATURE CONTROLLERS. The Foxboro Co., Inc., Foxboro, Mass. Bulletin 112.

Foxboro Air-Operated Temperature Controllers and Recorders are completely described in this bulletin. Information on the application of these instruments in many different processes is included.

* * *

THE INDUSTRIAL TRANSITION IN JAPAN. By Maurice Holland. Published by the National Research Council and the Japan Society. New York City. 1927. 51 pages and map.

The author of the above monograph, Maurice Holland, in his capacity as director of the Division of Engineering and Industrial Research of the National Research Council and as a delegate to the recent Pan-Pacific Science Congress, held in Japan, is exceptionally competent to give serious treatment to his subject.

The book briefly reviews the economic aspects of the fisheries, aeronautics and silk industries of Japan with particular emphasis on the general trade situation in that country. Mass production and modern industrial methods in Japan, the principles of which were eagerly seized upon and are now being rapidly assimilated to meet local conditions, foreshadow an economic advance throughout Japan, of great significance to the entire world, according to Mr. Holland.

* * *

RUBBER HAND STAMPS AND THE MANIPULATION OF INDIA RUBBER. By T. O'Conor Sloane. The Norman W. Henley Publishing Company. Fourth Revised Edition. 222 pages.

The purpose of this volume is clearly stated in the first paragraph of its preface. Its object is "to present in the simplest form the subject of the manipulation of rubber. To mould and cure the mixed gum but few appliances are needed and these can be made at home. The articles produced are of more than ordinary utility. These two facts give value to the art and furnish a *raison d'etre* for this book. If its instructions do not prove practical it will have missed its object."

It is well for the reader who has an acquaintance with rubber not to overlook the preface in taking up this book for he would soon find himself bewildered by the material presented. The first edition of this work was brought out in 1890, judging from the copyright, and the fourth edition, as well as its predecessors, appears to have overlooked a great many advances in the manipulation of rubber. In fact, the volume still reflects rubber manufacture in 1890 almost as though no revision had been made.

The publishers appear to specialize in "practical" books for the man whose work bench is his hobby. Their other volumes seem to cover most of the tinkering topics, from watch-making to radio. The author of "Rubber Stamps" has contributed other volumes on electricity and its applications, in which he may have come nearer modern practice than he has in his volume on rubber.

PEQUANOC STANDARDS

RECLAIMED RUBBER

Recognized For

UNIFORMITY
RELIABILITY
CLEANLINESS

Coupled With

"PEQUANOC SERVICE"

Pequanoc Rubber Co.

Main Office and Works

BUTLER, NEW JERSEY

JOHN L. HANDY, INC.	BEAHAN & SAINSBURY	ROBERT KNOBLOCK
Ohio Representative	*European Representative*	*Midwestern Representative*
513 Second National Bldg.	4 Mincing Lane	Room 509, Pythian Bldg.
AKRON, OHIO	LONDON, ENG.	SOUTH BEND, IND.

WAREHOUSE DELIVERIES FROM ALL AGENCIES